CONSUMPTION VALUES AND CONSUMER'S ATTITUDE TOWARDS INTENTION TO PURCHASE ELECTRIC CAR AMONG MALAYSIAN CONSUMERS

By

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ABSTRACT

The world is experiencing several environmental problems, which include the rising sea level, air and water pollution, and climate change. As such, consumers are becoming more aware of environmental issues and are thus following practices that decrease environmental degradation which show the variability in the action-value gap of green purchase intention in Malaysia. This study focused on the determinants of the electric car purchase intention in the Malaysian automotive industry. The study conceptualized consumption values as a multi-dimensional construct which consists of five dimensions of values, i.e. functional value, symbolic value, emotional value, novelty value, and conditional value. It also examined the relationships between consumption values, consumers' attitudes towards the electric car, infrastructure readiness, and intention to purchase electric cars. Further, the study also examined the role of attitude towards the electric car as a mediator factor, and infrastructure readiness as a moderator factor of intention to purchase the electric car. The study involved 264 respondents from Klang Valley. Out of 17 hypotheses tested, six were supported. The analysis reveals positive relationships between emotional value and consumers' attitude towards the electric car and the intention to purchase it. Besides, a significant and positive relationship was found between functional value, emotional value and consumers' attitude towards the electric car. Consumers' attitude towards the electric car mediates the relationship between functional value, emotional value and intention to purchase electric car. On the other hand, infrastructure readiness does not moderate the relationship between consumers' attitude towards the electric car and the intention to purchase it. The study also highlights the implications and the limitations of the study as well as the suggestions for future research.

Keywords: purchase intention, consumer attitudes, theory of consumption values, infrastructure readiness and electric car.

ABSTRAK

Dunia mengalami beberapa masalah alam sekitar, termasuk peningkatan paras laut, pencemaran udara dan air, serta perubahan iklim. Oleh itu, pengguna menjadi lebih peka terhadap isu-isu alam sekitar dan mengikuti amalan yang boleh mengurangkan kemerosotan alam sekitar yang memperlihatkan keragaman dalam jurang nilai tindakan keinginan pembelian hijau di Malaysia. Kajian ini memberi tumpuan kepada niat untuk membeli kereta elektrik dalam industri automotif Malaysia. Kajian turut mengkonseptualisasikan nilai-nilai penggunaan berbilang dimensi yang terdiri daripada lima dimensi nilai, iaitu nilai fungsional, nilai simbolik, nilai emosional, nilai kebaharuan, dan nilai bersyarat. Kajian ini juga meneliti hubungan antara nilai-nilai penggunaan, sikap pengguna terhadap kereta elektrik, kesediaan infrastruktur, dan niat untuk membeli kereta elektrik. Lebih lanjut lagi, kajian ini turut menguji peranan sikap terhadap kereta elektrik sebagai faktor pengantara dan kesediaan infrastruktur sebagai faktor penyederhana terhadap niat untuk membeli kereta elektrik. Kajian ini membabitkan seramai 264 responden di Lembah Klang. Analisis yang dijalankan mendapati daripada 17 hipotesis yang diuji, hanya enam yang disokong. Analisis menunjukkan terdapat hubungan yang positif antara nilai emosi dan sikap pengguna terhadap kereta elektrik dan niat untuk membeli. Di samping itu, terdapat hubungan positif dan signifikan ditemui dalam nilai fungsian, nilai emosi dan hubungan antara nilai fungsional, nilai emosi dan niat untuk membeli kereta elektrik. Sikap pengguna terhadap kereta elektrik didapati mengantarakan hubungan antara nilai fungsional, nilai emosi dan niat untuk membeli kereta elektrik. Sebaliknya, kesediaan infrastruktur tidak menyederhanakan hubungan antara sikap pengguna terhadap kereta elektrik dan niat untuk membeli. Kajian ini turut membincangkan implikasi dan batasan kajian serta cadangan penyelidikan masa hadapan.

Kata kunci: Niat pembelian, sikap pengguna, teori nilai penggunaan, kesediaan infrastruktur dan kereta elektrik.

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MOHD NORSAM MOHD SARI
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LIST OF ABBREVIATION

AVE	Average Variance Extracted
BEVs	Battery Electric Vehicle
CA	Consumers' Attitude towards Electric Car
CBSEM	Covariance-based SEM
CFA	Confirmatory Factor Analysis
CO_2	Carbon Dioxide
CV	Conditional Value
EVs	Electric Vehicle
EV	Emotional Value
f^2	Effect Size
FV	Functional Value
HEVs	Hybrid Electric Vehicles
ICE	Internal Combustion Engine
IR	Infrastructure Readiness
NAP	National Automotive Policy
NV	Novelty Value
PHEVs	Plug-in Hybrid Electric Vehicle
PLS	Partial Least Square
R^2	R Square
SEM	Structural Equation Modelling
SPSS	Statistical Package for Social Sciences
SV	Symbolic Value
TCV	Theory of Consumption Value
TRA	Theory of Reason Action
TPB	Theory of Planned Behaviour
VBSEM	Variance-based SEM

CHAPTER 1

INTRODUCTION

1.1. Overview of the Chapter

The purpose of this study is to examine the factors influencing Malaysian consumer's intention to purchase energy saving vehicle. First, the study's background is discussed. Next, the study's problem statement, research objectives and questions, scope, and significance are provided, followed by organisation of this thesis.

1.2. Background of the Study

Nowadays, the phenomenal increment in carbon dioxide (CO_2) emission has turned into a critical worldwide issue in view of the increase in demand from the automotive industry. This is due to the surge in urbanisation and fast economic development. The demand for transport is predicted to rise further, which will, in turn, cause the CO_2 emanation level to increase too. In Malaysia, the transport sector represented 28% of aggregate CO_2 emission, of which 85% originated from road transport. This had prompted enthusiasm to determine how the CO_2 outflow of this sector can be adequately diminished (Mustapa & Bekhet, 2015).

Since more than 80% of vehicles in Malaysia are still running on petroleum-based fuels, the country needs to reduce use of such fuels in the transport sector to lower CO_2 emission. In perspective of the anticipated increment in the vitality use in transport and the constrained oil reserves, it is a national need to move the transport sector towards more noteworthy expansion in fuel utilise and execute vitality proficiency in energy efficiency measures that focus on road transportation (Afroz et al., 2013).

As such, the increasing demand for energy, fuel subsidies, and unpredictable oil prices have directed the transport sector towards unsustainability besides posing a risk to the country's energy security. Furthermore, as a matter of fact Malaysia's transport sector is very dependent on petroleum, it significantly contributes to greenhouse gas discharges. Hence, the transport industry needs a transformation to lower greenhouse gas emanations, air pollution, and reliance on fossil fuel (Afroz et al., 2015).

Consumers are aware that their consumption behaviours contribute to environmental problems. This is because environmental problems are closely related to the industry's production pattern and the direct or indirect consumption pattern and behaviour of consumers. Thus, businesses have begun to adopt consumer behaviour as an attempt to address society's new concern by offering green products, i.e. energy efficient vehicles, which is also the main concern in today's world (Qader & Zainuddin, 2011).

This implies that consumers are focusing on protecting the environment by changing their behaviour. One of the most effective ways for them to positively impact the environment is by consuming or purchasing green products such as energy efficient vehicles. Nevertheless, several scholars (Kalafatis, Pollard, East, & Tsogas, 1999; Gardyn, 2013) argue that consumers' buying behaviour do not reflect their claim in environmental protection (Akehurst, Afonso, & Gonçalves, 2012), which means consumers do not always act according to their claim. This has become an issue for marketers and researchers. Therefore, to comprehend consumers' behaviour, it is important to determine key factors that lead consumers to act rather than just claim.

Based on previous studies, consumers have voiced their request for green products to businesses (Bockman, Razzouk, & Sirotnik, 2009; Schmeltz, 2012). Even though in the past few years more people were prepared to buy green products, not much evidence exists to imply that there is an increase in the purchase of green products. Regardless of consumers' environmental concern and positive attitude towards sustainability and green products, compared to the whole market, green products' market share is still limited to only 1% – 3% (Bray, Johns, & Killburn, 2011). This infers that environmental considerations have an insignificant role in consumer purchasing decisions and usually consumers disregard the environmental impact of their consumption (Mohr, Webb, & Harris, 2001).

Energy efficient vehicles run on at least one alternative to petroleum and diesel, which comprise electric vehicles, hybrid electric vehicles (HEVs), and battery electric vehicles (BEVs). In electric vehicles, electricity provides a fraction or the total propulsion power. HEVs have both an internal combustion engine and an electric motor to accomplish better fuel economy in comparison to similar-sized vehicles utilising conventional fuel. HEVs that are offered in the market include Toyota Prius, Ford Escape Hybrid, and Honda Civic Hybrid. The electric vehicle's internal combustion engine is smaller compared to that of an HEV and has a bigger battery which can power the automobile for 20 up to 60 miles (Sovacool & Hirsh, 2009).

The electric vehicle is being promoted to Malaysians as a solution to decrease reliance on fossil fuel and lessen carbon discharge from the transport sector, mainly personal transportation. It is well-known that electric vehicle is a feasible sustainable tool to 'decarbonise' personal transportation because it can enhance the quality of air and is a

'near to market' green technology (Mayor of London, 2009; Shen, Han, Chock, Chai, & Zhang, 2012). Nonetheless, for the Malaysian market, public acceptance of electric vehicle is crucial other than ensuring a supply push for electric vehicles.

With regards to the development of electric vehicle across the nation, China's has explosive market growth figures and encouraging results are being shown also in other parts of the region. In Singapore, while electric vehicle owners still only make up a tiny percentage of the car owning population at 0.09%, their numbers almost quadrupled from 137 to 520 last year (Today Online, 2018). In Japan, while only 20,000 people owned electric vehicles in 2016, it's predicted that more than ten times that number will be sold to Japanese consumers in 2030 alone (The Japan Times, 2018). Even in Thailand, where electric vehicle ownership has been traditionally unpopular, government support of electric vehicle manufacturing has led to predictions that by 2036, the Thai government will have implemented the installation of 690 charging stations and supported the proliferation of 1.20 million electric vehicles nationwide (KPMG, 2018). While South Korea has huge electric vehicle potential, with 14,000 units sold in 2017, up 130% year-on-year (DBS, Asian Insight, 2018).

However, in the case of Malaysia, until 2017, 46,833 units of energy efficient vehicles comprising of PHEVs and electric vehicles were sold in Malaysia and this was considered low (refer to Table 1.1). Only 1.68% of consumers purchased energy efficient vehicles while the remaining 98.32% are yet to do so.

Table 1.1

Comparison between Energy Efficient Vehicle Plug-in Hybrid Electric Vehicle (PHEV) and Electric Vehicle (EV)) and Passenger Vehicle Sold in Malaysia from 2013 to 2017

Year	PHEV and EV		Passenger Vehicle	
	Total Units Sold	Market Share (%)	Total Units Sold	Market Share (%)
2013	13,663	2.37	576,640	97.63
2014	7,982	1.36	588,341	98.64
2015	9,754	1.65	591,298	98.35
2016	5,976	1.16	514,545	98.84
2017	9,458	1.84	514,679	98.16
Total	**46,833**	**1.68%**	**2,785,503**	**98.32**

Source: Malaysia Automotive Association. Summary of sales and production data. Retrieved from http://www.maa.org.my/info_summary.htm

Further to the above, electric vehicles are considered as one of the imperative solutions for climate change and petroleum dependences. Electric vehicles include the Battery Electric Vehicles (BEVs), Hybrid Electric Vehicles (HEVs), and Plug-in Hybrids Electric Vehicles (PHEVs). These vehicle-types are named based on how these vehicles powered for driving. Table 1.2 states the key differences among all the electric vehicle types:

Table 1.2

Key differences among different types of electric vehicles

Types of Electric Vehicle	Features Differences
Battery Electric Vehicle (BEV)	BEV runs entirely on a battery and electric drive train, without an internal combustion engine (ICE). Electricity is stored in on-board batteries that are charged by plugging into the electricity grid. The batteries, in turn, provide power to one or more electric motors.
Plug-in Hybrid Electric Vehicle (PHEV)	PHEV runs mostly on a battery. PHEV is also equipped with an internal combustion engine (ICE), running on gasoline or diesel fuel, that can recharge the battery and/or to replace the electric drive train when the battery is low and more power required.

Hybrid Electric Vehicle (HEV)	HEV has two complementary drive systems – a gasoline engine and fuel tank, and electric motor, battery and controls. The engine and the motor can simultaneously turn the transmission, which powers the wheels. Unlike BEVs and PHEVs, HEVs cannot be recharged from the power grid; for energy it has solely rely on gasoline.

Source The Canadian Automobile Association (CAA), 2019; https://www.caa.ca/about-us/.

The technology of electric vehicle is a new technology revolution that could reshape Malaysia's automotive industry. Initially, only gasoline type vehicles were available. Currently, electric types like BEV, HEV, plug-in hybrid electric vehicle (PHEV), and full cell electric vehicle (FCEV), which have an almost zero-carbon emission, are available too. The existence of electric vehicles may alter consumers' preference due to the increase in oil price, global warming, and climate change (WWF, 2016; Saiful Hasan, 2017; Adnan et al., 2017). Nevertheless, the Malaysian government needs to ensure infrastructure readiness, i.e. having charging stations at strategic locations and be competitive with conventional vehicle refuelling infrastructure, which will play a significant role in increasing market penetration and public awareness.

The current available models for electric vehicle in Malaysia are the Nissan Leaf, Renault Zeo, Tesla Model S and another types of electric vehicle becoming popular in Malaysia is the PHEV such as BMW330e, Mercedes Benz C350e and Volvo S90 T8. As for infrastructure readiness, currently as of December 2018, Malaysia is having 251 stations for public electric vehicle chargers at 192 locations available (Malaysia Green Technology, 2018). However, across Asia, EV manufacturers and governments who are pushing for faster adoption of electric vehicles over ICE ones are showing that they recognise the need greater convenience through accessibility of charging stations. For instance, in Singapore, various service providers are implementing plans to install another 1,000 charging stations across the island by 2020 (Today Online, 2018). In the

same time period, China will build 120,000 new public charging stations (South China Morning Post, 2018).

The automotive industry is among the main sectors that help to boost the Malaysian economy by contributing direct and indirect taxes and reducing the unemployment rate by offering more employment opportunities. According to a media statement by Malaysia Automotive Institute (MAI), in 2017, the Malaysian automotive industry had contributed RM 40 billion or 4% to the national GDP and employed 736,632 people. On the other hand, the automotive sector had also contributed knowledge and skills via technological improvements and the chance to grow other businesses, such as tooling and auto parts, which benefited the country's industrialisation programme.

Thus, to successfully market and sell electric vehicles, it is vital to understand what consumers think (consumers' attitude), what causes them to act (consumption values), and how they act (green purchase intention), i.e. their green purchase behaviour.

1.3. Problem Statement

Although green marketing is trending in today's business world, it remains new in Asian nations like Malaysia (Wahid et al., 2011). Currently, countries in Asia are the prime target markets of global marketers because of the rise in environmental awareness and Asian consumers' purchasing power (Mohd Noor & Muhammad, 2012). Furthermore, the behaviour and practice of consumers and the manufacturing industry and marketplace have also transformed because of rising cognisance of environmental problems (Barber et al., 2012, Zafarullah & Huque, 2018). Nonetheless, local and global marketers are enduring complications in creating satisfactory and efficient

marketing strategies due to4 the lack of information regarding green purchase intention of people in certain countries (Aman et al., 2012, Kashi, 2019). As such the review on the existing literature, indicated that the trend of green purchase behaviour of consumers is closely influenced by a few determining factors. While this is so, the question remains as to whether the same situation applies for consumers in Malaysia. It was found a few studies that emphasised on the green purchase behaviour carried out in Malaysia e.g. Ahamat et al. (2018), Goh and Wahid (2015) which indicate several factors such as price, sensitivity, green advertising, environmental awareness, belief in green product, value orientation, response towards environmental wellness having positive effect on the green purchasing behaviour of Malaysian consumers.

Malaysian consumers' green purchase behaviour intensity was found to be discouraging (Mohd Noor & Muhammad, 2012). Out of 616 respondents, only 30% had experience in buying green products. Hence, extra effort is needed to increase green product consumption among Malaysian consumers. Consumers' intention to buy green products must be investigated, before introducing new green products, which incur additional costs and investments, and promoting existing green products in Malaysia. To predict consumers' behaviour, it is imperative to understand what shapes an individual's opinion and causes an intention.

There is an array of factors influencing intention to purchase green vehicles. Some researchers had listed cost, environmental concern, and brand (Razak et al., 2014), while for others, discharges, self-efficacy, readiness to pursue green info, congruence with self-image, and social value were the influencing factors (Oliver & Lee, 2010, Adnan et. al. 2018). Other than that, feeling of responsibility, environmental values,

environmental knowledge, perception of environmental advertising, perception of environmentally friendly product (Jamaliah et al., 2013, Plotz et al., 2018), relative advantage, compatibility, pro-environmental, subjective norm, and perceived behavioural control (Hong et al., 2013, Xu et al., 2019) were also recorded as factors. It further expand the factors that influencing intention to purchase green vehicles by fewer researcher stated that monetary conditions, consumer awareness, vehicle quality, and demographic background affect intention to purchase green vehicles (Wong et al, 2013, Montian & Suthikarnnarunai, 2018), whereas environmental concern, psychological benefit, consumer knowledge, infrastructure readiness, demographic background, and consumer acceptance (Sang & Bekhet, 2014; 2015) has also enhanced the important factors that could influences the consumer. On the other hand, others added factors were demographic background, consumer attitude, subjective norm, perceived behavioural control, self-transcendence, conservation, self-enhancement, environmental consequences, and individual consequences (Afroz et al., 2013 & 2015, Adnan et al., 2018). Nonetheless, a small number of studies (Alesia Sigang et al., 2014, Suki & Suki, 2015 and Maharum et al., 2017) was conducted in Malaysia that unveiled the connection between consumption values and green purchase intention, which could be another key theory that can be used to measure consumers' purchase intention instead of using TPB and TRA. Therefore, this study focused on consumption values as predictors of consumers' intention to purchase electric vehicle.

Apart from that, an extensive examination of attitude-behavioural relationship in various fields of study had been conducted. This relationship was studied for many different products such as green energy (Hartmann & Apaolaza-Ibanez, 2012, Ahmad et al., 2019), green and sustainable homes (Tan, 2013, Darko et al., 2018), organic food

(Paul & Rana, 2012, Yogananda & Nair, 2019), hydrogen-electric motorcycle (Chen et al., 2012), environmentally friendly wine (Barber et al., 2012), and organic personal care items (Kim & Chung, 2011, Ghazali et al., 2017, Amberg & Fogarassay, 2019). Afroz et al. (2013, 2015) investigated how Malaysian consumers' attitude influenced their green purchase intention of electric vehicle and it was reported that the intention was low. It is crucial to examine attitude because attitude strongly influences consumers' social thoughts and is assumed to have a strong effect on behaviour (McLeod, 2014, Khurana et al. 2019). Tan and Lau (2010), Khurana et al. (2019) had suggested to include consumers' attitude on the types of green products in the market. Thus, in this study, consumers' attitude towards electric vehicle was included as a predictor of electric vehicle purchase intention and a mediator to study the association between consumption values and electric vehicle purchase intention.

Infrastructure readiness concerns the accessibility of public charging stations (technology enabling settings) for users to recharge their electric vehicles Wang and Liu (2017) posited that the unavailability of retail infrastructure selling new transportation fuels was the main reason hindering its introduction. This is important for deciding whether to purchase a vehicle running on a new fuel type. Furthermore, the availability of electric grid for charging, other than efficiency and emission, is a vital factor affecting the magnitude of PHEVs (Skerlos & Winebrake, 2010, Moon et al., 2018). Past studies had reported that the acceptance level of electric vehicles was discouraging, regardless of the low environmental impact and high energy efficiency, due to the lack of charging infrastructures (Anegawa, 2010; Martin, Shaheen, Lipman, & Lidicker, 2009, Thananusak et al., 2018). After a thorough search of the relevant literature, studies which examined infrastructure readiness as a moderator for the

relationship between consumers' attitude and electric vehicle purchase intention were unavailable in the Malaysian context. However, past studies in Malaysia indicates that infrastructure readiness is being used as the independent variables by Sang and Bekhet (2014 & 2015) and according to Namazi and Namazi (2016) reported that by having moderating variable makes it possible to respond to the inquiries regarding "when" "how" and "why" a particular relationship exists between the independent and dependent variable. So, in this context, infrastructure readiness plays a significant role in increasing market penetration and public acceptance. As such, this study included infrastructure readiness as a moderator for the relationship between consumers' attitude and electric vehicle purchase intention.

The CEO of Green Tech Malaysia, Ahmad Hadri Haris, announced that the company will fix 300 ChargEV stations by 2016, including at Petronas petrol stations, and 1,000 stations by end of 2017 (Paul Tan, 2016). Besides, the company aims to fix 25,000 charging stations throughout the country by 2020, which will support the push for electric vehicles. Nevertheless, when speaking to reporters on the sidelines of Tokyo Motor Show 2017, Perodua Auto vice-president Datuk Zainal Abidin Ahmad said Malaysia does not have enough infrastructure for the company to produce electric vehicles. He further mentioned that Malaysia needs sufficient charging facilities and a variety of lithium-ion batteries, which are inadequately available at the moment. As such, it is necessary to study electric vehicle production's impact and its market requirements in the country, if the company is assured that there is adequate infrastructure to maintain the vehicles. The CEO of Malaysia Automotive Institute (MAI), Datuk Madani Sahari, also declared that a key infrastructure needed to produce electric vehicles in Malaysia is the charging station (The Star, 2017).

Registered vehicles in Malaysia rose from 7,686,684 (1996) to 19,016,782 (2016) (Ministry of Transport, 2017). For 2017, based on recent statistics, the total number of registered vehicles was 21,016,782 of which 11,506,080 were private passenger cars. This portrays the land transport sector as one of Malaysia's important sector (Malaysian Environmental Quality Report, 2016). Hence, this sector had contributed to the decline of the ambient air quality in the country (Malaysian Environmental Quality Report, 2016). Furthermore, Isiyaka and Azid (2015) reported that anthropogenic activities (vehicular discharge, industrial activities, construction sites, and bush burning) are a major contributor to air pollution. Thus, MAI CEO Datuk Madani mentioned that the country is preparing to launch only energy efficient vehicles by 2025, signifying a 100.0% penetration, from 42.8% in 2016 (The Sundaily, 2017).

Introduction of energy efficient vehicles and innovation in relevant technology can direct the transport sector towards a sustainable path. The Malaysian government's aim, since late 2011, is to move the transport sector towards zero-emission mobility. Specifically, by 2020, they want to increase the number of electric vehicles in Malaysia by 10% (Ministry of Transport, 2010). Besides that, private companies are motivated by the government to prepare the infrastructure needed for efficiently operating electric vehicles. They are also developing standards and regulations for companies which intend to set up charging stations for electric vehicles. These steps are required to establish an environment that can create curiosity in using electric vehicles. Automobile manufacturers in Malaysia (Proton) and Japan (Nissan and Mitsubishi) are conducting trial runs of electric vehicles in Malaysia to assess the vehicles' viability and to promote awareness of the vehicles' plug-in option. If Malaysia wants to attain its goal of zero-emission mobility, it must quickly create industry interest and acceptance of the new

products amongst the people. Not much research based on Malaysia had examined consumers' level of intention, key influencing aspects, and impediments in purchasing energy efficient vehicles such as electric vehicles. As a result, an information gap among Malaysian transportation policymakers and scholars as well as marketers and automotive producers exist.

Substantial research on green purchase behaviour has been performed according to the Theory of Planned Behaviour (TPB) or Theory of Reasoned Action (TRA). For instance, Ramayah et al. (2015) applied TRA's motivational perspective to examine how individual values and attitudes in a developing nation influenced green purchase behaviour. Next, Ooi et al. (2012) and Punitha and Azmawani (2011) employed TRA to determine the factors influencing green purchase behaviour and investigate the relationships between determinants and green purchase behaviour. On the other hand, Tan (2013) applied TPB to measure homebuyers' intention to buy green and sustainable houses, whereas utilising the same theory, Chan (2013) examined the drivers that influenced consumers' purchase behaviour of green personal care products.

Nevertheless, TPB and TRA have several limitations, particularly in predicting behaviour. Firstly, the determinants of intention must not be restricted to only subjective norms, perceived behavioural control, and attitude since there could be additional factors which influence behaviour. Empirical investigations had exposed that only 40% of behaviour was elucidated by TPB or TRA (Ajzen, 1991; Werner, 2004). Next, the supposition that humans can act freely without any limitation is usually groundless. Constraints like limited capability, time, environment or unconscious habits will restrict the liberty to act. Moreover, the time frame between behavioural intention

and actual behavioural is not addressed by the theory, whereby the intention of an individual might change from time to time (Ajzen, 2002; Zint, 2002). Thirdly, environmental or economic factors that might influence consumers' intention to perform a behaviour are not considered in TPB and TRA although normative influence is considered. Unconscious motives are not considered since human beings are assumed to be rational and make systematic decisions based on existing info (Rahab et al., 2016). To conclude, TPB and TRA are predictive models utilised in predicting humans' action according to certain fixed criteria. Nonetheless, people do not always act as predicted by those criteria, whereby their actions could change over time. The lengthier the time gap between behavioural intention and actual behavioural, the less likely the behaviour will be expressed.

According to Woodruff (2007), one of the major sources of competitive advantage is values, which has become a concern of consumers in performing purchase behaviour. Hence, for companies to stay competitive, they are required to create values for their products. If consumers have perceived the products' value, then purchase will occur. Nevertheless, a value-action gap regarding customers' buying behaviour was identified by Young, Hwang, McDonald, and Oates (2016), while Peattie and Crane (2015) identified a significant gap about concerns and actual purchase behaviour. A value-action gap occurs when customers' claim that they are concerned about the environment, but they have difficulty in carrying out the action. Consequently, to close this gap, the Theory of Consumption Values is proposed to be the underpinning backbone to investigate factors that may inculcate Malaysian automobile consumers to move towards green sustainability in their consumption by choosing electric vehicles over conventional cars.

1.4. Research Objectives

Based on the study's background and problem statement, the key aim is to determine the antecedents of intention to purchase electric vehicle in Malaysia. Specifically, the research objectives are:

1. To determine the influence of consumers' attitude toward electric car on consumers' intention to purchase electric vehicle.
2. To determine the influence of consumption values (functional, symbolic, emotional, novelty, and conditional) on consumers' intention to purchase electric vehicle.
3. To determine the influence of consumption values (functional, symbolic, emotional, novelty, and conditional) on consumers' attitude toward electric vehicle.
4. To determine whether consumers' attitude toward electric vehicle mediates the relationship between consumption values (functional, symbolic, emotional, novelty, and conditional) and consumers' intention to purchase electric vehicle.
5. To determine whether infrastructure readiness moderates the relationship between consumers' attitude toward electric vehicle and consumers' intention to purchase electric vehicle.

1.5. Research Questions

To realise the research objectives, these research questions are addressed:

1. Does consumers' attitude toward electric vehicle influence consumers' intention to purchase electric vehicle?
2. Do consumption values (functional, symbolic, emotional, novelty, and conditional) influence consumers' intention to purchase electric vehicle?
3. Do consumption values (functional, symbolic, emotional, novelty, and conditional) influence consumers' attitude toward electric vehicle?
4. Does consumers' attitude toward electric vehicle mediate the relationship between consumption values (functional, symbolic, emotional, novelty, and conditional) and consumers' intention to purchase electric vehicle?
5. Does infrastructure readiness moderate the relationship between consumers' attitude toward electric vehicle and consumers' intention to purchase electric vehicle?

1.6. Scope of the Study

The main objective is to reveal the antecedents of electric vehicle purchase intention; thus, consumers were chosen to investigate the variability in the action-value gap of green purchase intention in Malaysia. The population of this research comprised of consumers in Klang Valley and the sample population comprised of consumers who had visited selected car showrooms in Klang Valley. Cities which served as the sample population are Kuala Lumpur, Petaling Jaya, Subang Jaya, Shah Alam, and Klang.

Electric vehicle car is selected as the green product in this investigation. It represents a high involvement green product, which generates social identity and status and is consumed in a riskier social setting (Afroz et al., 2013). According to Velazquez et al. (2015), the transportation sector is the largest contributor to carbon dioxide (CO2) emissions due to fossil fuel combustion. Further, EVs do not have an internal combustion engine and therefore do not use petroleum (Adnan et al. 2018).

1.7. Significance of the Study

This study concentrated on investigating the antecedents of consumers' intention to purchase electric vehicle, which will benefit academicians, marketers, the government, and automotive producers in accelerating the use and acceptance of electric vehicles in Malaysia. The theoretical and practical implications of this research are elaborated in the following subsections.

1.7.1. Theoretical Significance

Most previous studies on green purchase intention had adapted or adopted TPB (e.g., Hong et al., 2013; Tan, 2013; Chan, 2013; Iman Khalid & Yuserrie, 2011; Ali & Ahmad, 2012; Kim & Chung, 2011) or TRA (e.g., Ramayah et al., 2010; Vazifehdoust et al., 2013; Punitha & Azmawani, 2011; Ooi et al., 2012; Chan, 2001; Nabsiah, Elham Rahbar, & Tan, 2011). This study aimed to expand the Theory of Consumption Values by adding two new variables that can offer an improved understanding of the intention to purchase electric vehicle in the consumers' behaviour perspective. Therefore, there is a necessity to further comprehend the factors that influence intention to purchase electric vehicle. Moreover, this study will alert researchers regarding the contributions, in different contexts and research areas, towards the Theory of Consumption Values.

Past research had also focused on environmental attitude rather than consumers' attitude to predict green purchase intention as well as on the mediator for the relationship between the predictor and green purchase intention. Nonetheless, Hong et al. (2013) had suggested to consider consumers' attitude in future studies, which indicated a lack of study on specific attitudes. This was because Tan (2011) found that lower attitude-behaviour correlation may exist if attitude was operationalised as general attitude. As such, this study addressed the gap between attitude-behaviour by considering consumers' attitude towards electric vehicle as a predictor and mediator.

Additionally, this study will also contribute to the literature on electric vehicle purchase intention by testing the functional value (price, quality, and maintenance cost), symbolic value (social value, social influence, and self-identity), emotional value, novelty value (product knowledge and environmental knowledge), and conditional

value (government support and manufacturing promotion) in green purchase intention in Malaysia. Results of direct and indirect impacts of the antecedents of electric vehicle purchase intention will increase the empirical literature in marketing consumer behaviour and other disciplines. It is hoped that this study could establish the theoretical inconsistency found in previous literature.

On the other hand, this study is among a very few studies that examined the moderating effect of infrastructure readiness for the relationship between consumers' attitude and electric vehicle purchase intention, which was not extensively studied in green purchase intention. Previous studies had explored willingness to pay more (Ong et al., 2015), perceived consumers' effectiveness (Ming et al., 2015), and eco-label awareness (Rashid, 2009) but limited studies have examined infrastructure readiness as a moderator. Thus, this study, in which infrastructure readiness is applied as a moderator instead of a predictor or factor, will benefit academicians besides increasing the number of Malaysian empirical studies on the automotive and green product industries.

1.7.2. Practical Significance

Apart from theoretical contributions, this research will also benefit the stakeholders. Specifically, this study will enable a better understanding of consumers' intention to purchase electric vehicle. Most previous studies on green purchase intention focused on general green products. Nevertheless, the findings from those studies cannot be generalised to all green products, especially high involvement green products like electric vehicles. By determining this, if the intention to purchase electric vehicle among Malaysian consumers is low, marketers can take action to provide more information to create awareness about the importance of electric vehicle among

consumers to form a sustainable environment for the future generations. On the contrary, if the level of consumers' intention to purchase electric vehicle is high, marketers can establish proper communication tools (e.g., promotion, discount, and after-sales services) that can influence consumers to convert their intention to actual behaviour.

Besides, the key aim of this investigation is to determine the antecedents of electric vehicle purchase intention, specifically, the factors that influence consumers' intention to purchase electric vehicle. Thus, this study can provide managers with information on the factors that they should focus on to influence consumers' intention to purchase electric vehicle. By examining these factors, managers will be aware of the strengths and weaknesses of each factor that impacts consumers' intention to purchase. Using statistical analysis to quantify and determine the impact of the factors, managers will know the benefit of improving each factor. This information will provide managers with some insight regarding the future of electric vehicles.

On the other hand, this study will also benefit the government or policymakers, whereby it can be applied as a guideline to provide better support to the green product industry, particularly the automotive industry. The automotive industry contributed RM 40 billion to the national GDP in 2017, making it one of the important industries in Malaysia. Furthermore, an objective under the national automotive policy (NAP) is for Malaysia to be the regional hub for energy efficient vehicles. Therefore, this study will provide some insight to policymakers by estimating the actual behaviour of consumers through the level of consumers' intention to purchase electric vehicle. Consequently, it can be known whether the objective of the NAP can be achieved and whether it is

necessary to revise the policy. Nevertheless, government support in terms of tax exemption policy for energy efficient vehicle ended in 2014. If a higher intention to purchase electric vehicle is revealed, the government should consider implementing an appropriate policy in the future to increase the sales volume of energy efficient vehicle, especially electric vehicles.

Furthermore, Malaysia's national brands (i.e., Proton and Perodua) have lost their market share to other brands although they are still the top two brands in terms of market share and sales volume. Moreover, these national automotive producers have not introduced any electric vehicle to the market. Therefore, the discoveries of this investigation are expected to be useful for the national brand automotive producers to predict the future of electric vehicles in Malaysia and consider whether to produce electric vehicles or any other green cars that can compete with those of other producers. Nonetheless, with the challenges currently faced by automotive producers due to globalisation, this study is anticipated to provide significant information to automotive producers to cater the needs of different segments of the automotive market through the factors that influence consumers' intention. Besides theoretical and practical contributions, this study will also offer new knowledge to the area of study, which will be discussed in the following chapter.

1.8 Definition of Key Terms

a. Functional Value : The effectiveness of a product in delivering its functionality or physical performance derive from it characteristics or attributes (Sheth et al., 1991).

b. Symbolic Value : The meaning and image carry out by the product (Sheth et al., 1991).

c. Emotional Value : The effectiveness of the product that arouses the feeling (Sheth et al., 1991).

d. Novelty Value : The effectiveness of the product that creates something new, leads to curiosity and/or fulfils the desire for knowledge (Sheth et al., 1991).

e. Conditional Value : Add-ons values or specific to the product's functional or social value (Sheth et al., 1991).

f. Attitude : A favourable or unfavourable respond towards a particular object (Fishbein & Ajzen, 1975).

g. Intention : The propensity or probability to purchase a specific brand (Belch & Belch, 2004)

h. Energy Efficient Vehicle : As a vehicle that meet a set of define specification in terms of carbon emission level (g/km) and fuel consumption (1/100km). Energy efficient vehicle includes fuel efficient vehicles, hybrid, electric vehicle and alternatively fuelled vehicle e.g. CNG, LPG, Biodiesel, Ethanol, Hydrogen and Fuel Cell (Malaysia Automotive Institute (MAI))

1.9 Organisation of the Thesis

This thesis comprised of five chapters namely introduction, literature review, and research methodology, data analysis and lastly on recommendations and conclusion of this research.

Chapter 1 begins with a brief introduction, study background, and problem statement. Next, the research questions and objectives, and scope and significance of the study are outlined. This chapter ends with organisation of the study.

Chapter 2 briefly discuss purchase behaviour in Malaysia. The chapter also reviews the literature on variables used in the structural model that focuses on previous studies on green purchase intention. In addition, the factors that influence consumers' attitude and green purchase intention will also be discussed. Furthermore, the variables used to form the theoretical framework and hypotheses formulation are also outlined in this chapter.

Chapter 3 explains the methodology employed. The research design, study sample and population, sampling technique, data collection technique, measurements, results of the pilot test, and the statistical method used to analyse the data will be discussed.

Chapter 4 focuses on the analyse and results or finding of the study including the response rate, participants profile, descriptive results of main variables, factor analysis, reliability analysis and relevant statistic in explaining the findings.

Chapter 5 is the last chapter for this thesis. This chapter presents the discussion and conclusion of the study. It discusses the major findings of the study. This chapter is then elaborates the research limitation and future research suggestions.

CHAPTER 2

LITERATURE REVIEW

2.0. Overview of the Chapter

In this chapter, a comprehensive review of the literature pertinent to this study is provided. First, the chapter's overview is provided followed by marketing concepts like green marketing, green product, and green purchasing. Thereafter, green purchasing intention as the dependent variable is explained, followed by consumers' attitude, infrastructure readiness, and consumption values (functional, symbolic, emotional, novelty, and conditional). After the description of each variable, the influence of infrastructure readiness as a moderator and consumers' attitude as a mediator is explained. In the next section, the underpinning theory is elucidated. Finally, the research model development is explained, and the research hypotheses are developed.

2.1. Green Marketing

Environmental issues plague the whole world and problems like air pollution, conservatory effects, ecological unbalances, and global warming are caused by human activities (Sharma, 2011; Shirsavar & Fashkhamy, 2013). Nevertheless, environmental cognisance among consumers has considerably risen throughout the world. Marketers and consumers are more aware of the necessity to shift to green products and services due to the harm caused by non-biodegradable solid waste and pollutants. It is widely believed that the shift to 'green' could be costly in the short term; however, in the long run, it is essential and financially beneficial.

Thus, green marketing concept emerged because of organisations' interest in the environment. Organisations noted that their existence and progression lie in the harmonisation between its interest and the benefits enjoyed by the consumers and society. Green marketing comprises of extensive range of activities like product alteration, production process transformation, change in advertising, and modification in packaging (Mahmoud, 2018).

Hence, based on past research, three key definitions of green marketing were generated. Firstly, green marketing pleases environment-conscious consumers by endorsing products that cause no damage to the environment. Several scholars had defined green marketing as 'the need to distinguish the so-called "green consumers" and to direct all marketing decisions toward meeting the expectations and demands of this consumer population' (Banyte et al., 2010). Certain studies had tested the effectiveness of branding methods in presenting fresh products to green markets (Muntean & Stremtan, 2010). This implied that regardless of their proclivity for environmentally friendly products, green consumers faced trouble in differentiating a green product from one that is not. These investigations also noted the unavailability of appropriate or appealing marketing strategies in the current market (Tureac et al., 2010).

The next definition pertains to the triple bottom line goals and was formed according to the classic marketing mix (traditional 4Ps, namely, product, price, promotion, and place) (Needle, 2010). A green strategy mix consists of six dimensions, i.e. 5Ps + EE, which represent planning, process, product, promotion, people, and eco-efficiency, as suggested by Violeta and Gheorghe (2009). In the third view, green marketing does not just link green consumers with a green marketing mix. This perception includes

additional corporate demand management features, like forecasting the demand of people for green, recycled, and re-manufactured products, rising the demand for build-to-order products, and forming competitive advantage and environmental priorities of a company (Sharma et al., 2010). This definition reveals how green marketing strategies are integrated into other business processes in the forward and reverse supply chains (recycle and re-manufacturing). Since green marketing has several features, numerous alternate terms like environmental marketing, environmental marketing management, environmental product differentiation, and sustainability labelling schemes were formed to represent the idea of green marketing (Liu et al., 2012).

As such, green marketing can be broadly described as assimilating environmental matters into strategic marketing processes (Chan et al., 2012). Liu et al. (2012) had listed three distinct green marketing tactics: (1) pleasing green consumers with green products; (2) modifying the marketing strategy to comprise reference to fixed environmental efficiencies; and (3) attaining competitive advantage by embracing green values and benefits by comprehending the market, handling request for products that are sustainable during and after use, and implementing processes that tackle environmental priorities. On the other hand, Sharma et al. (2010) summarised the green marketing framework's goals as to provide both surplus and reverse supply a strategy that entails a blend of market intelligence, demand management, product development, and enhanced supply chain processes. Apart from that, green marketing can be described as the management process that recognises, anticipates, and fulfils the desires of consumers and society in a successful and sustainable manner (Chan, 2014).

Green marketing strategy practised by companies would affect firm performance. The adopted green marketing strategy will allow the companies to use different products and qualities besides creating an avenue to enter into a new market, which then affects their performance (Robins, 2006). Green marketing practices were developed in the 1990s according to a few aspects. Substantial expectation and fast growth in the green marketing literature accompanied the intense activity at the start of the decade. Nonetheless, the performance of companies selling green products was rather substandard regardless of noteworthy progresses in environmental marketing (Crane, 2000). Marketing managers opined that the consumer backlash in the mid-1990s was a key reason causing this unsatisfactory performance. This backlash against green marketing was possibly an element in the extensive range of markets in industrialised nations.

Furthermore, marketers must expand their activities, plan different ways to present value and costs, change how companies discuss human interactions and the environment, and move consumption's focus from obtaining products to ecologically realising the satisfaction of want (Eneizan et al., 2016). Marketers (business, government, and consumers) can enable this process by recognising prospects for redefining value within marketing and exchange. The world's biosphere is sustainable whereas human consumption marketing in its present structure might be unsustainable (Polonsky, 2011).

According to Ottman (1998, as cited in Renfro, 2010), conventional marketing will not work in today's market. Furthermore, it is imperative for organisations to market themselves and their products or services as environmentally friendly to achieve sales

success. This is because consumers are aware of environmental problems and conserving the environment has become their main concern and for businesses to reach them, green marketing should be implemented by all businesses. Therefore, it was important to include green marketing concept in this study to comprehend to what extent the emergence of green marketing concept influenced consumers' intention.

2.2. Green Product

In the past decade, terms such as green product, sustainable, environmentally friendly, pro-environmental, eco-friendly, and ecological have been regularly used interchangeably by marketers to guide and entice their consumers, as part of green marketing (Gosavi, 2013). Environmentally friendly denotes products or services that are not detrimental to the environment. Nonetheless, for more than 10 years, the U.S. Federal Trade Commission (FTC) had released warnings regarding products or services advertised as environmentally friendly or environmentally safe. On the other hand, Mainieri et al. (1997) explained that eco-friendly products are ecologically safe products that can enable the long-term objective of conserving the natural habitat. Environmentally friendly products or environmental awareness products function to decrease the usage of natural resources and reduce harmful environmental effects throughout the life-cycle of the products (Tseng & Hung, 2013). Additionally, Tan and Lau (2012) and Shah and Pillai (2012) identified green products as ecological or environment-friendly products. A green product is defined as a product manufactured utilising harmless materials and eco-friendly procedures, and is certified as such by an accredited organisation (Kumar & Ghodeswar, 2015). In other words, green products are produced using materials that are less toxic or recycled with minimal packaging and

can be recycled after use, thus, reducing the harm on the natural environment i.e. will not pollute the earth.

As such, the characteristics of green products include products that are organically grown such as agricultural products, recyclable, reusable, biodegradable, conservation of energy, contain recycled contents, non-toxic chemicals, approved chemicals, harmless to the environment, eco-friendly packaging, and not tested on animals (Mishra & Sharma, 2010; Shah & Pillai, 2012). With the existence of green products in the market and green consumers in society, green purchase will occur.

Thus, green product is at the core of green marketing mix and the most crucial part of the whole green marketing strategy. Nonetheless, green product is not limited to the final product only but involves all the elements of the product, such as the materials and packaging used, the production process, etc. (Fan & Zeng, 2011). As such, in business, 'green product' and 'environmental product' are typically used to denote efforts to safeguard or enhance the natural environment by preserving energy and/or resources and lowering or stopping the usage of noxious agents, contamination, and waste (Singh & Pandey, 2012).

As mentioned by Nie et al. (2018), electric vehicles have emerged as the most prominent representatives of what are commonly referred to as new energy vehicles (NEVs). Their zero-level carbon emissions during use, low energy consumption, and relatively simple and mature technology have elevated electric vehicles to a leadership role in setting the future course of the auto industry. Jayaraman et al. (2015) in his paper mentioned that global warming which occurred due to the impact of carbon dioxide (CO2) has reached

an alarming level. Road transport is primarily the most notable source of pollution in the world. With the sophistication in environmental technology, a variety of environmentally friendly products have been introduced in the market such as hybrid and electric car to encounter the crisis.

Based on the above fact, environmentally friendly or green or eco-friendly cars emit a low level of carbon compounds or cause a less harmful impact on the environment when it is used (Sharma, 2015). Green cars are automobiles that utilise alternative fuels such as biofuels, natural gas, hydrogen, and electricity from the grid and/or alternate propulsion systems that include hybrid and electric engines (Beltramello, 2012). Environmentally friendly automobiles decrease air pollution and greenhouse gas emanations and contribute towards energy independence by decreasing oil imports besides encouraging sustainable transport. Green vehicles are considered the 'wave of the future' since it has helped to change the way consumers contribute towards environmental sustainability. Green automobiles include hybrid, biodiesel, natural gas, ethanol, electric, hydrogen, and fuel cell vehicles (Sharma, 2015). Green car is an important product from the green products industry (Ishioka & Yasuda, 2009; Marcus & Fremeth, 2009). Cars are a major contributor to air pollution due to the emissions released from the cars which harm the natural environment. Green cars emit less pollutants and use sustainable fuel resources, thus, are much more environmentally friendly compared to conventional cars.

The green product examined in this study is the electric vehicle. Electric vehicles, comprising electric motors, batteries, and power electronics that have significant benefits compared to current gasoline-powered internal combustion engines. These

vehicles are less noisy, practically non-polluting, and more energy efficient, dependable, and sturdy. Key improvements have been made in numerous electric drive technology components since late 1980s. The batteries must be frequently charged by plugging into any main (120V or 240V) supply. Electric vehicles' history is much longer than most humans realise, whereby the vehicles appeared shortly after Joseph Henry created the first DC-powered motor in 1830. The first known electric car was a small model constructed by Professor Stratingh in Groningen, the Netherlands in 1835. On the other hand, the first electric vehicle was assembled in 1834 by Thomas Davenport in the United States of America (USA). Next, Moses Farmer assembled the first two-passenger electric vehicle in 1847. However, no rechargeable electric cells (batteries) were available then. Electric vehicle became a practical choice when Frenchmen Gaston Plante and Camille Faure created (1865) and enhanced (1881) the storage battery, respectively.

Electric vehicles are recognised as zero-emissions vehicles (ZEVs) and are considerably more environmentally friendly compared to gasoline- or LPG-powered vehicles. Not only that, maintenance is minimal since electric vehicles have fewer moving parts. Furthermore, with no engine, oil changes, tune-ups, or timing are not required, and electric vehicles also do not have an exhaust. Electric vehicles are much more energy efficient in comparison to vehicles with gasoline engines and are less noisy when in operation. An alternative to electric vehicles is HEVs. There are various possible HEV configurations, but commonly, an HEV has an electric drivetrain like an electric vehicle, and a fuel-burning engine capable of periodically recharging the batteries. A plus point of HEV is that the fuel-burning engine is most efficient in only a limited range of operating settings (speed and load). Moreover, at this most efficient operating point, the

fuel-burning engine generally releases its lowest levels of discharges. Nevertheless, when in use, the car's engine must run under an extensive range of speeds and loads, and hence its efficiency drops and more discharges are emitted compared to when it is functioning at its most efficient point all the time. Besides that, electric drivetrains are most competent at only one point, but the drop in efficiency for other speeds and loads is much reduced. As such, HEV can run the fuel-burning engine at its most efficient point to charge the battery and use the electric drivetrain to pick up all the slack under other conditions. Through this, emanations are reduced compared to when only the fuel-burning engine is used to drive the car and fuel economy can be notably enhanced. Hybrid technologies increase the functional range of electric vehicles beyond what an all-electric vehicle can attain with only batteries. A hybrid automobile can function on batteries within an urban/polluted area, and then change to its engine outside the urban area.

Among the available makes and models for electric vehicle in Malaysia is the Nissan Leaf, which has a substantial gain in performance and range, with the electric motor producing 38% more power and 26% more torque, at 110 kW (148 hp) and 320 Nm, respectively. Renault's Zoe features a fully-electric powertrain, with a higher-capacity 40 kWh lithium-ion battery that increases its range on the New European Driving Cycle (NEDC) from 195 km (later models could go up to 250 km) to 378 km. Its single synchronous electric motor produces 87 hp between 3,000 to 11,300 rpm and 220 Nm of torque from 250 to 2,500 rpm. This allows the Zoe to reach 48 km/h from standstill in four seconds and perform the century sprint in 13.5 seconds. Moreover, it also has a top speed of 135 km/h. Next, Tesla Model S has a 410 km operating range, a 0–100 km/h time of 3.3 seconds, and a 249 km/h top speed. Another type of electric vehicle

becoming popular in Malaysia is the PHEV introduced by car manufacturers. The makes and models available include BMW330e, Mercedes Benz C350e, and Volvo S90 T8. More of these types of vehicles will be introduced in the Malaysian market in the near future.

2.3. Green Purchase

Green purchasing is seen as an effective means, since the 1990s, to reduce environmental problems related to human activities (Ho et al., 2013). Green purchasing has been implemented throughout the world, especially in developed countries such as Canada, Japan, Korea, Sweden, United Kingdom (UK), and the USA and some developing countries like Thailand, Philippines, India, Brazil, and Mexico (Ho et al., 2014). According to Li and Geiser (2005, as cited in Ho et al., 2015), green purchasing practices are established and operated under government support.

Moreover, green purchase that measures consumer behaviour were also adopted in a wide range of environmentally friendly products such as skin care products (Hsu et al., 2017), organic products and vegetables (Kim and Chung, 2011; Zagata, 2012; Zhou et al., 2013), eco-friendly packaging (Prakash and Pathak, 2017), energy efficient products (Ha and Janda, 2012), and general green products (Chan, 2001; Chan and Lau, 2002; Chen and Chai, 2010; Lai and Cheng, 2016; Yadav and Pathak, 2016).

Additionally, consumers who purchase green products are also worried about how green the products are. To better comprehend green consumerism, it is imperative to know green products. Tan and Lau (2015) and Shah and Pillai (2012) identified green products as ecological or environment-friendly products. Green purchasing, also known

as environmentally preferable purchasing (EPP), is the affirmative selection and procurement of green products or services, whereby the products or services result in lesser environmental effects over their life cycle of manufacturing, transportation, usage, and recycling or disposal while demonstrating social responsibility and ethics (Vazifehdoust, Taleghani, Esmaeilpour, Nazari, & Khadang, 2013; Ho, Dickinson, & Chan, 2016). Green purchasing can also be described as the purchasing efforts that prioritise products or services that generate the least harm or reduce the negative impacts to the environment, human health, and society (Lee, 2014).

In other words, green purchase is the purchasing of environmentally friendly or sustainable products that are 'recyclable' and 'beneficial' to the environment and avoiding of products that endanger the environment and society (Mostafa, 2007). Green purchasing consumer behaviour is usually measured based on consumers' readiness or intent to purchase green products. This conscious behaviour or intention ultimately transforms into their decision to purchase green products, to achieve environmental sustainability (Joshi & Rahman, 2015). Particularly, 'general green or sustainable products' benefit the environment and society and typically comprise eco-friendly carry bags, recycled papers, herbal products, energy saving bulbs, energy efficient appliances and automobiles, and household items (Lee, 2008; Joshi & Rahman, 2015). Furthermore, green products are manufactured in an ecologically sound manner, can be recycled, generate little waste (Chan & Chai, 2010).

Hence, it seems consumer behaviour is influenced by attitudinal aspects and needed other cognitive aspects like concern, knowledge, and consumer effectiveness to manage consumers' purchase intention and purchase behaviour for general green products (Tan, 2011; Kim, 2011; Paul et al., 2016; Kumar et al., 2017).

2.4. Green Purchase Intention

Green purchase intention (GPI) is consumers' readiness in buying green products portrayed by them for the sake of the environment, and such willingness holds motive to be purchased green products (Chan, 2001; Akehurst et al., 2012; Dagher & Itani, 2014). Thus, consumers care about the ecological quality of the products and the environmental repercussions related to their purchase decision for such products.

Beginning in the 1970s, a substantial volume of investigations was carried out on consumer behaviour for environmentally friendly products. Numerous variables such as values, beliefs/knowledge, needs and motivations, attitudes, and demographics were demonstrated to guide consumer choice concerning the purchase of environmentally friendly products (Bui & Loyola, 2005). Green purchase intention is conceptualised as the probability and inclination of an individual to contemplate buying or using products with eco-friendly characteristics over other conventional products (Nik Abdul Rashid, 2009). Chan (2001) described green purchase as a specific type of eco-friendly behaviour that consumers express to show their concern for the environment. Purchase intention is crucial to forecast consumer behaviour (Fishbein & Ajzen, 1975), while consumer intention has been applied as a substitute for actual behaviour (Azila & Teoh, 2016). Kotler and Armstrong (2001) contended that in the evaluation phase, consumers rank brands, which becomes part of the purchase intention process. Nevertheless,

attitude of others and unforeseen situational factors can interfere with purchase intention and purchase decision. For instance, a consumer could develop a purchase intention influenced by factors like expected income, expected price, and expected product benefits (Iman & Zainuddin, 2011).

Nonetheless, in other studies, intention was defined as the propensity or probability to purchase a specific brand (Belch & Belch, 2004). Besides that, Ramayah et al. (2010) described intention as a decision to carry out an action in a certain way or to express a specific behaviour (Fishbein & Ajzen, 1975). In the attitude-behaviour relationship, intention is a function of the level of effort needed to carry out a behaviour. In brief, intention refers to consumers who are ready to accept a product or service; however, the action to purchase the product or service is still under consideration due to the influence of other factors. As mentioned earlier, consumers are not always free to act without any limitations. In contrast to general intention, green purchase intention is a new concept used to refer to the intention to purchase a product that is considered green. Generally, green purchase intention refers to an individual who has plans to purchase a product or service that is environmentally friendly.

TRA is one of the key theories used in research on green purchase behaviour (Baker & Ozaki, 2008; Gupta & Ogden, 2009). This theory was developed by Fishbein and Ajzen in 1975 (p. 60). TRA is applied to contend that consumers' attitude and subjective norm towards environmental problems can affect their behaviour and action towards green purchase (Fishbein & Ajzen, 1975). Support for the TRA model has been extensively discoursed in the consumer behaviour literature to predict intention (Simbolon, 2015) or consumers' behaviour (Mostafa, 2007; Cheah, 2009). According to Mei et al. (2012),

TRA is applicable when: (1) purchase intention is totally under the consumers' volitional control (Dodd, 2010); (2) people are logical and make systematic use of accessible info (Fishbein & Ajzen, 1975); and (3) humans reflect on consequences of their actions prior to deciding whether to engage in certain behaviours (Fishbein & Ajzen, 1975). Nevertheless, according to Wen and Nor (2015), at least four restrictions have been identified in using TPB or TRA. The first is the determinant of intention must not be limited to attitudes, subjective norms, and perceived behavioural control. Next, the supposition of people can act without any restriction is usually baseless since inadequate ability, time, environment or unconscious habits will restrict the liberty to act. The third one is values and environmental aspects that could affect consumers' intention to express a behaviour are not considered. The last limitation is TPB or TRA is a predictive model that foresees an individual's action according to certain criteria as people do not always act as predicted and it could transform over time, particularly when consumers take more time to perform an intention, the likelihood of the behaviour to happen is less. Therefore, considering the drawbacks, Solaiman et al. (2017) disclosed that the Theory of Consumption Values (i.e., functional, symbolic, emotional, epistemic, social, and conditional) influenced consumers to perform green purchase behaviour.

The Theory of Consumption Values has also been applied in several studies on purchase intention. For example, Williams and Soutar (2009) scrutinised the associations between value, satisfaction, and behavioural intention in an adventure tourism setting. Their study demonstrated that value-for-money, emotional value, and novelty value were significant predictors of satisfaction and future intentions. Another research by Wang et al. (2013) was conducted to determine the determinants of

App users' behavioural intention according to the Theory of Consumption Values and discover the roles of consumption values in mobile Apps context. The outcome revealed that consumption values had a substantial impact on consumer behavioural intention to utilise mobile Apps. Besides that, Alesia et al. (2014) examined consumption values, environmental concern, and attitude concerning green products purchase intention. Their research tested the relationships between consumption values and environmental attitude, environmental concern and attitude, attitude and purchase intention, and the direct relationship between consumption values and purchase intention. It was found that intention was formed except for the relationship between consumption values and attitude.

There are also researchers who have conducted studies on purchase intention. For instance, Tan (2013) used the Theory of Plan Behaviour model to predict the intention to purchase green and sustainable houses of Malaysians and found that attitude, perceived behavioural control, and perceived self-identity had positive causal effects on behavioural intention to purchase. On the other hand, Rizwan et al. (2013) applied four basic concepts of green market (green perceived value, perceived risk, trust, and purchase intention) and discovered that green perceived risk was negatively associated with green perceived trust and green purchase intention. In contrast, both green trust and green purchase intention had a positive connection with green perceived value. In another research, Chan (2013) used environmental attitude, social influence, self-efficacy, store image, and role of salespersons as independent variables, willingness to pay more as moderator, and purchase intention as dependent variable. Chan reported that only environmental attitude and self-efficacy influenced purchase intention for green personal care products. Additionally, the relationship between environmental

attitude and purchase intention was moderated by willingness to pay more.

Besides that, many studies were carried out by different authors in different countries under different cultural settings in different areas over the years. Their aim was to recognise, determine, and examine factors that influence green purchase intention. Several examined predictor variables were reported to have a correlation with green purchase intention. Among them were environmental attitude or attitude towards green purchase or green products (Kim, 2011; Lee, 2008; Mostafa, 2007; Punitha & Azmawani, 2011) and environmental or ecological knowledge (Mostafa, 2007). Next were environmental concern or environmental consciousness (Arttachariya, 2012; Kim & Choi, 2005; Lee, 2008, 2009; Lee, Kim, Kim, & Choi, 2014; Mostafa, 2007; Punitha & Azmawani, 2011) and demography (Lee, 2009; Mostafa, 2007; Tan & Lau, 2010). Conditional value (Lin et al., 2010; Lin & Huang, 2012), epistemic value (Lin et al., 2010; Lin & Huang, 2012), emotional value (Lin et al., 2010; Lin & Huang, 2012), and social influence or peer influence or reference group influence (Arttachariya, 2012; Lee, 2008, 2009) were also examined. Lastly were the variables functional value - price and functional value - quality (Lin et al., 2010; Lin & Huang, 2012).

Generally, empirical literature had proved the strength of purchase intention as a proxy measure of future behaviour (Ajzen & Fishbein, 1980). The reasons for using purchase intention as a single dependent variable are firstly, purchase intention has an inclination to be the best single predictor of actual behaviour (Peter & Olson, 2002) and secondly, predicting purchase intention is much simpler compared to predicting actual purchase behaviour (Ajzen & Fishbein, 1980). The last reason is studies

investigating the effect of consumers' characteristics on purchase intention are less likely to encounter bias than those examining consumers' characteristics on actual behaviour due to researchers not including or examining the situational factors (Rahbar & Abdul Wahid, 2011; Shahnei, 2012; Goh & Abdul Wahid, 2015).

By understanding consumers' purchase behaviour, marketers and producers are provided with information such as consumers' buying criteria, which affect their decision making or purchase intention. Purchase intention is an element in consumer decision-making process and is viewed as a complicated process which varies according to the types of product or service (Foley, 2003). Acquiring a vehicle is an important decision for most people. This is because consumers seldom purchase one and they need to spend more time to search for information, compare between producers, and then make the decision. Therefore, electric vehicle is considered a high involvement product.

Hence, studying green purchase intention is crucial to predict behaviour and as a proxy for actual behaviour. Nonetheless, three factors must be considered when examining purchase intention, i.e. consumers' attitude, infrastructure readiness, and consumption values. For example, consumers may form a purchase intention based on their favourable beliefs towards a green product, the value provided by purchasing a product, and infrastructure readiness that support their electric vehicle purchase decision. These three factors were included in this current study and discussed further in the following sections.

2.5. The Influence of Consumers' Attitude toward the Intention to Purchase Electric Vehicle

Attitude has always been highlighted as a crucial antecedent of behavioural intention and actual behaviour in green consumer psychology studies. It is a learned predilection to react in a constantly favourable or unfavourable manner towards an item (Fishbein & Ajzen, 1975, p. 211). Furthermore, this behavioural phenomenon signifies what consumers like and dislike in general and specifically concerns purchase decision of products or services (Blackwell et al., 2006). As such, attitudes can be categorised into general and specific (Sun & Willson, 2008; Chen & Chai, 2010; Tan, 2011). General attitude concerns the tendency to participate in the relevant behaviour of a category of attitude object, whereas specific attitude is a strong predictor of a single behaviour on a particular attitude object (Tan, 2011).

Thus, specific attitude is commonly seen as attitude towards green products like electric vehicle. In environmental consumer research, it represents beliefs or feelings towards the purchase decision of environmentally friendly products such as electric vehicle, and the ecological consequences of such specific behaviour (Riethmuller & Buttriss, 2008). Nevertheless, attitude towards green products like electric vehicle varies from general environmental attitude at the behavioural level of green purchase decision to achieve benevolent environmental sustainability (Tan, 2011).

Some researchers had established the appropriateness of this specific phenomenon with purchase intention and purchase behaviour for general green products namely electric vehicle (Chan, 2001; Chan & Lau, 2002; Lee, 2008; Chen & Chai, 2010; Lai & Cheng, 2016; Yadav & Pathak, 2016). Hence, it was exposed that people with a strong positive

attitude towards green products like electric vehicle were anticipated to have a high degree of involvement in their purchase decision for such products (Lee, 2008; Chan & Chai, 2010; Joshi & Rahman, 2015).

In the meantime, many Malaysian consumers are considering purchasing an electric vehicle. Schuitema et al. (2013) stated that attitude guides the comprehensive assessment of the specific behaviour in the perspective of consumer intention towards purchasing electric vehicle. They described attitude as the positive or negative evaluation of the adoption behaviour. In predicting behaviour, attitude has an important part in the mental setup of individual obvious behaviour.

Functional Theory of Attitude and Constructive Theory of Attitude are the two main theories of attitude formation (Argyriou & Melewar, 2011). According to the functionalist perspective, attitude is shaped by info stowed in memory. When a person has a specific purpose, the deposited evidence intensifies the formation of acceptable or unacceptable attitude (Argyriou & Melewar, 2011). Meanwhile, the constructive theory states that attitude is formed spontaneously and influenced by external info and direct experience (Argyriou & Melewar, 2011; Reed et al., 2002). Customers' attitude towards electric vehicle is primarily based on the Constructive Theory of Attitude Creation. As such, it is reasoned that customers' purchase intention of electric vehicle is formed when they have a positive attitude towards electric vehicle during their interaction with vehicle salesmen.

This propensity to communicate and interact with electric vehicle sellers is purchase intention. Adnan et al. (2016a, b) noted that in numerous investigations, attitude is a

key variable (anterior) of behavioural intention. For instance, Schuitema et al. (2013) discovered that consumers with a positive attitude towards environmental concerns were keener to purchase green automobiles. Ajzen (1991) explained that for consumers with a more positive attitude, their intention to express a certain behaviour will be stronger. Moreover, Bockarjova and Steg (2014) and Chen and Tung (2014) reported that past research had proved that when people thought about purchasing green vehicle, they performed a specific behaviour and had a higher level of intention to perform because of social pressure.

Studies on specific attitude towards green purchase behaviour are limited. Hence, more studies on different product categories, especially high involvement products like electric car are needed. The studies discussed earlier investigated general green products rather than specific products. Besides, studies conducted on the electric car in Malaysia (Sang & Beckhet, 2014; Sang & Beckhet, 2015; Adnan et al., 2016; Afroz et al., 2015) did not include attitude, both general and specific. Attitude is an important predictor of intention, which can lead to actual behaviour. It allows marketers or companies to know consumers' feeling towards their product or service and thus permit them to make improvements accordingly to satisfy their customers, especially in multicultural Malaysia. Adnan et al. (2017) recommended in their study that Malaysian consumers' attitude towards the electric car should be examined in future research.

Therefore, a specific attitude, namely consumers' attitude towards the electric car was included in this study to predict electric car purchase intention. Apart from this, infrastructure readiness was also deemed to be a significant moderator that could influence electric car purchase intention, and it will be discussed further in the next

section.

2.6. Moderating Role of Infrastructure Readiness

Electric vehicles with a short driving range are not suitable for long-distance travel. As such, it is crucial to build charging infrastructures, which are significant in the electric vehicle industry. Charging infrastructure readiness is significant in influencing consumers' willingness to acquire electric vehicles. Browne et al. (2012) scrutinised the factors that deter the promotion of electric vehicles and discovered that insufficient charging infrastructures was one of the inhibitors. If charging infrastructures are not available or lacking in number, electric vehicle users will experience 'range anxiety' (Chung, 2014; Romer et al., 2013; Foley et al., 2010; Lundstorm et al., 2012; Jung et al., 2015; Ferreira et al., 2011; Rodrigues et al., 2015; Salah & Kama, 2017). Thus, by building charging infrastructures, a widespread electric vehicle market penetration will occur (Silvester, Sacha et al., 2013).

Many recent studies had explained the potential of electric vehicles from varying viewpoints such as the technical (Frischknecht & Flury, 2011; Werther & Hoch, 2012), economic (Kley, Lerch, & Dallinger, 2011; Hackbarth & Madlener, 2016), environmental (Sourkounis, Ni, & Broy, 2011), and psychological (Ziefle et al., 2014) perspectives. However, there still exist challenges that must be looked into like the time required to recharge batteries (Hidrue, Parsons, Kempton, & Gardner, 2011) and the restricted range of electric vehicles compared to ones with combustion engine (Jarass, Frenzel, & Trommer, 2014; Barth et al., 2016). Furthermore, the fragmental charging network is also an impediment (Egbue & Long, 2012; Halbey, Kowalewski, & Ziefle, 2015). Limitations in the range of electric vehicles and charging options are currently

the main obstacles in achieving a fast acceptance of electromobility. These restrictions also contribute towards range anxiety, a type of psychological stress investigated in several studies, that concerns driving electric vehicles in critical range conditions (Rauh et al., 2015), range comfort zones concept (Franke, Günther, Trantow, Rauh, & Krems, 2014), and users' charging behaviour (Franke & Krems, 2013; Bühler et al., 2013).

Nonetheless, electric vehicles can be an effective substitute for conventional automobiles (Claas, Marker, Bickert, Linssen, & Strunz, 2010; Winter, Kunze, & Lex-Balducci, 2010). For example, the daily average range driven in Germany is 43 km, which fits electric vehicles' possible driving range (Follmer & Lenz, 2008). This infers that the current battery capacity is adequate for daily trips to the workplace, shops, or visits to neighbouring cities (Jarass et al., 2014). Others had reported similar findings on the range of electric vehicles being enough for average daily trips (Morrow, Karner, & Francfort, 2008; Pearre et al., 2011). Hence, consumers' combustion engine vehicle can be substituted with a limited range electric vehicle without requiring any major changes to their mobility behaviour. Nevertheless, long-distance travelling is still a huge obstacle for electric vehicles since it needs to be recharged during the trips.

Thus, fast-charging could be a suitable resolution to handle both the requirement to travel long-distances and long recharging times, since the battery can be recharged to 80% of its capacity in under 30 minutes. Nonetheless, fast-charging opportunities are still lacking, especially in Malaysia, since execution of the charging network is still in the early stages. Furthermore, there is also less information on user requirements regarding the expansion of the charging network and the placement of specific charging stations. Earlier approaches to include the user during the planning process of charging

networks were typically restricted to discrete-choice and origin-destination models (Bernardo, Borrell, & Perdiguero, 2013; Namdeo et al., 2014) or activity-based approaches (González et al., 2014; Shahraki, Cai, Turkay, & Xu, 2015) that were unable to wholly manage the users' desires concerning concrete location decisions.

Therefore, regarding location assessment by users, it is essential to take into account user diversity, particularly previous experience with electric vehicles, for several reasons. For instance, Bühler et al. (2013) divulged that experience using electric vehicles had a significant positive effect on the general perception of electromobility (Bühler, Cocron, Neumann, Franke, & Krems, 2014). Not only that, Rauh et al. (2015) reported that experience in driving electric vehicle lowered range anxiety (Rauh, Franke, & Krems, 2014) and drivers had become more comfortable with both the lower range levels of electric vehicles and taking extended trips with their electric vehicles (Franke, Cocron, Bühler, Neumann, & Krems, 2012; Franke, Rauh, Günther, Trantow, & Krems, 2015). This could possibly influence users' requirements for charging station locations and thus may cause problems in the planning of charging infrastructure. First, the locations and concrete arrangement of charging stations should motivate drivers familiarised with combustion engine cars to change to electric vehicles. This means the charging network must be designed in a manner that guarantees the charging infrastructure is not seen as an obstacle to acceptance by prospective users. Second, the charging stations must fulfil the needs of experienced electric vehicle-drivers, which could be different from those of future users. These likely variances concerning the assessment of charging locations must be examined to design and build a demand-driven and technology disseminating charging network that pleases both user groups.

Hence, understanding infrastructure readiness is imperative, especially since it is an important element that provides support for after-sales service of products for consumers when the product is considered new in the country. It also provides a better comprehension of electric vehicle purchase intention. However, examining consumers' attitude and infrastructure readiness is not enough to elucidate green purchase intention in a consumer's purchase decision process. Understanding consumption values is also important. Therefore, the next section discusses consumption values in depth.

2.7. Theory of Consumption Values

Sheth, Newman, and Gross (1991) developed the Theory of Consumption Values. It elucidates why consumers decide whether to purchase a certain product, why they pick one product type over another, and why they select one brand instead of another (Sheth et al., 1991). The authors had listed three fundamental axioms to the theory as follows:

a. Consumer choice is a function of several consumption values;
b. The consumption values make different contributions in any given circumstance; and
c. The consumption values are independent.

Sheth et al. (1991) mentioned that five values determine the behaviour of consumers when dealing with intention, namely, functional, social, emotional, conditional, and epistemic. Suki (2016) stated that recent studies had focused more on the relationship between consumers' environmental behaviour and consumption values. These values argue that people place different values to different products that will automatically

influence buying decision (Ramkissoon, Nunkoo, & Gursoy, 2009). The influence of purchase decision making is still highly dependent on the circumstance, yet the five consumption values are based on multiple areas such as social psychology, clinical psychology, sociology, economics, and experimental psychology (Lin & Huang, 2012; Tapachai & Waryszak, 2000). This theory assimilates elements from several consumer behaviour models and predicts that consumer choice is a function of multiple consumption values (Turel et al., 2010). In addition, this theory also discusses why consumers buy certain products or choose one product over another (Candan & Yıldırım, 2013). On the other hand, this theory depends on how consumers are being informed about a product or service, which intrinsically and extrinsically motivates the decision to consume (Kim, Chan, & Gupta, 2007). Thus, the explanation of individual consumption behaviour is more applicable using the Theory of Consumption Values (Wang, Liao, & Yang, 2013).

Moreover, this theory is relevant to product types, such as durable and nondurable and industrial goods and services (Sheth et al., 1991). It can be employed to guess consumers' consumption behaviour, specifically purchase intention, and to describe and explain it according to the outcome. Consumers' consumption decision can be affected by either one or all the five consumption values (Sheth et al., 1991).

Basically, consumption values refer to the desirable approach to achieve an individual's values (Lai, 1995), which are attained via actions and activities like economic exchange, social interaction, possession, and consumption (Sheth et al., 1991). According to Lai (1995), consumption values are instrumental in nature,

whereby it is closely related to human needs and motivation. It is created to drive consumers in decision making or provide solutions for internal or external causes.

Sheth et al. (1991) applied the Theory of Consumption Values in their research on cigarette smoking (purchasing decision between smokers and non-smokers, product type between filtered and non-filtered cigarettes, and brand choice between Marlboro and Virginia Slims). Besides, Long and Schiffman (2000) and Sweeney and Soutar (2001) also used this theory in their investigations. Out of the five values, Sweeney and Soutar (2001) only applied functional, social, and emotional values due to the lower importance of epistemic and conditional values in purchasing durable commodities. In addition, they aimed to develop a general value measure. On the other hand, Long and Schiffman's (2000) study aimed to section consumers based on their value and relationship with service providers and to comprehend motivation and behaviour.

According to Lin et al. (2010), this theory is yet to be applied in green consumption research. More recent studies that had adopted this theory, like Lin et al. (2010) and Lin and Huang (2012), aimed to increase comprehension of consumer choice behaviour and aid practitioners, policymakers, and scholars to determine what stimulates specific choices. Wang et al. (2013) applied this theory to study the main determinants of behavioural intention in employing pay-per-use mobile artefacts for Apps. The most recent and only studies based on this theory in Malaysia were by Solaiman et al. (2017) and Maharum et al. (2017), which examined consumption values, environmental concern, and attitude towards purchase intention in the context of green products. Thus, the Theory of Consumption Values is more applicable to

elucidate individual consumption intention.

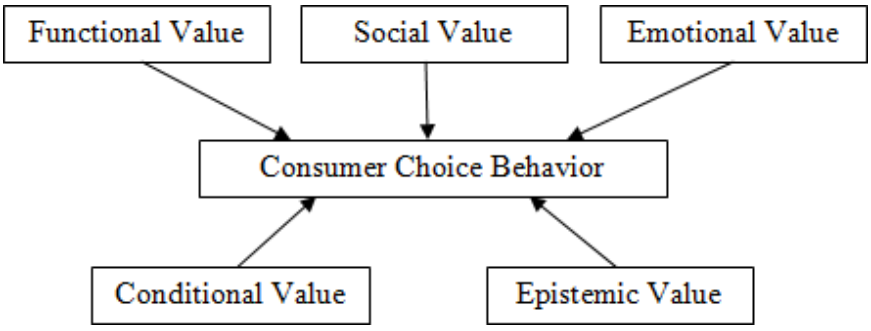

Figure 2.1

Conceptual Framework of the Theory of Consumption Values

Source: Sheth, Newman, and Gross (1991)

This has been used in many different settings as mentioned by Sheth et al. (1991). For example, it was applied to study consumer choice behaviour (Lin et al., 2010), green product choice behaviour (Lin & Huang, 2012), adventure tourism (Williams & Soutar, 2009), mobile application use (Wang et al., 2013), smartphone user experience (Bødker et al., 2009), and green electrical product (air conditioner) (Alesia et al., 2014). However, no study that applied this theory was conducted on green automobiles. There are studies on green automobile in Malaysia like Hong et al. (2012, 2013), Jamaliah et al. (2013), Sang and Bekhet (2014, 2015), and Afroz et al. (2013, 2015), including a cross-cultural study between Korea and USA by Oliver and Lee (2010). Nonetheless, none of these studies adopted or adapted the Theory of Consumption Values.

Furthermore, this theory was tested based on different countries such as Taiwan (Lin et al., 2010; Lin & Huang, 2012; Wang et al., 2013), Egypt (Bødker et al., 2009), and Australia (Williams & Soutar, 2009). In Malaysia, studies that applied TPB (Chan, 2013; Hong et al., 2012, 2013; Iman Khalid & Yuserrie, 2011; Tan, 2013) and TRA (Ooi et al., 2012; Punitha & Azmawani, 2011; Ramayah et al., 2010) to predict green

purchase behaviour were performed. However, only Alesia et al. (2013) tested the Theory of Consumption Values in Malaysia for consumer intention to purchase green product, specifically air conditioner. As mentioned by Williams and Soutar (2009), consumer values are an important antecedent to consumer intention. As such, applying the Theory of Consumption Values can provide researchers with new findings and a broader insight for practitioners.

2.8. The Influence of Consumption Values on Intention to Purchase Electric Vehicle and Consumers' Attitude toward Electric Vehicle

Sheth et al. (1991) had listed five values that influenced the behaviour of consumers when dealing with intention, namely, functional, social, emotional, conditional, and epistemic values. Recent studies emphasised more on the relationship between consumers' environmental behaviour and consumption values (Suki, 2016). Scholars had claimed that consumers placed different values to different products, which automatically affected purchase decision (Ramkissoon, Nunkoo, & Gursoy, 2009). The influences of purchase decision making are still highly dependent on the situation, and the five consumption values are based on multiple disciplines like social psychology, clinical psychology, sociology, economics, and experimental psychology (Lin & Huang, 2012). The theory of consumption value assimilated elements from several consumer behaviour models and predicted that consumer choice is a function of multiple consumption values (Turel et al., 2010). Moreover, the theory also discussed the reasons consumers buy certain products or choose one product over another (Candan & Yıldırım, 2013). This theory depends on how the consumers are being informed about the product or service, which intrinsically and extrinsically motivates the decision to consume (Kim, Chan, & Gupta, 2007). Thus, the explanation of

individual consumption behaviour is more applicable using the Theory of Consumption Values (Wang, Liao, & Yang, 2013).

Values and attitudes are alike as both encompass adaptation, accommodation, organisation, and incorporation of environmental info to encourage interchanges with the environment that are favourable to conserve ideal functioning (Turel et al., 2010). Although there are similarities, values and attitudes can differ in at least four ways (Vaske & Donnelly, 1999). Firstly, value represents the single and constant belief that a person utilises as a standard to assess attitude and behaviour (Rokeach, 1973). Next, value transcends objects, situations, and issues (Rokeach, 1973). Thirdly, the dominant aspect of an individual's belief system is value. Lastly, value tends to be restricted to number, while attitude can be numerous (Vaske & Donnelly, 1999). Value is the most abstract of the social cognition and because of the abstraction, attitudes and behaviours are formed. As such, values guide behaviours through influence from abstract values to attitudes to specific behaviour.

Furthermore, the five consumption values identified by Sheth et al. (1991) are inter-related to each other. Firstly, consumers will look at a product's attributes that include product outlook, price, and quality, which is the functional value. After considering the product's physical attributes, consumers will seek advice from reference groups (i.e., friends and family, colleagues and/or relatives) and influence will take place in this stage and thus symbolic value is formed. Subsequently, consumers will seek more information about the product. Due to technological advancement, consumers can easily access a variety of information through the internet. This is where novelty value is formed. Next, emotional value is whether the product can arouse consumers' emotional feeling, which

then makes them decide to purchase the product.

Lastly, when the emotional feeling is stimulated, consumers will search for benefits that could convince them to purchase the product such as on-going incentives, promotion or discounts. When positive consumption values are created in consumers' mind, they will have a positive attitude towards the product, for example, an electric car, and the possibility of the consumers to purchase it is higher. Hence, this current study utilised the multi-dimensional approach of the Theory of Consumption Values to investigate the green purchase intention of the electric car. Each consumption value is discussed in the following subsections.

2.8.1. Functional Value

Sheth et al. (1991) defined functional value as 'the perceived utility acquired from an alternative's capacity for functional, utilitarian or physical performance. An alternative acquires functional value through the possession of salient functional, utilitarian or physical attributes. Functional value is measured on a profile of choice attributes.' (p. 160). Traditionally, Sheth et al. (1991) assumed that functional value was the main determinant of consumers' choice in a decision-making situation. The best characteristics or attributes that describe functional value are reliability, durability, and price (William & Soutar, 2009). For example, tourists will consider exotic food, historical sites, and the quality of facilities when choosing their vacation destination (Phau, Quintal, & Shanka, 2014). Consumers are easily affected by factors of price and quality of the product itself as recently consumers have developed an awareness for the things they purchase.

Functional value was presumed to be the main motivator of consumer choice (Sheth et al., 1991). It was conceptualised as the value gained in terms of price and quality (Woodruff, 1997). Consumers' decision to buy or utilise a product was influenced by the product's qualities or features (Williams & Soutar, 2009) and the realisation of consumers' practical requirements (Bødker, Gimpel, & Hedman, 2009). Price was reported to be the most prominent functional value (Wang et al., 2013). Nevertheless, past research (e.g., Lin & Huang, 2012; Lin, Huang, & Wang, 2010; Williams & Soutar, 2009) determined that functional value did not significantly affect consumers' choice and purchase intention. Besides that, Wang et al. (2013) discovered that functional value positively affected behavioural intention.

In the context of green products, prior investigations reported that people typically had positive attitudes towards eco-friendly products and were ready to pay more for them to protect individual and societal benefits (Xu et al., 2012; Liu, Pieniak, & Verbeke, 2013; Tully & Winer, 2014). As mentioned by Lin and Huang (2012), in 1993 in the UK, 79% of female consumers were prepared to pay up to 40% more for eco-friendly products with verified green aspects. Suki (2013c) also claimed that consumers tend to be influenced by functional benefits gained from the performance of the product. Thus, it can be summarised that price and quality influenced consumers' decision to buy green products, i.e. the electric car.

2.8.2. Symbolic Value

The second most addressed factor is symbolic value, social value. Sheth et al. (1991) stated that 'social value, symbolic value is [a] perceived utility acquired from an alternative's association with one or more specific social groups such as demographic,

socioeconomic and cultural' (p. 161). In today's competitive marketing environment, businesses must understand consumer behaviours and form marketing decisions accordingly. This is to ensure continuous purchasing from consumers based on what they want from the product. For many young adult consumers, consumerism and seeking status are legitimate activities before purchasing (O'Cass & Siahtiri, 2013; Kim & Jang, 2014). O'Cass and Frost (2002) claimed that the propensity for consumers to seek prestige and recognition for certain products is well known. This indicated that consumers could be influenced by the element of social recognition in terms of prestige during the product selection process.

Symbolic value is defined as the meaning and image of a product (Sheth et al., 1991). This value is formed when a person or group of individuals share the meaning of a product; thus, the process to comprehend and assess symbolic value is much tougher in comparison to functional value (Burcu & Seda, 2013). Oliver and Lee (2010) determined that the association between social value and purchase intention of electric car varied according to cultures. For instance, social value was found to positively affect collectivism cultures. Malaysia is regarded as a highly collectivist society (Arfa Adlina, 2012). In addition, past research (e.g., Lin & Huang, 2012; Lin et al., 2010) revealed that consumers' choice was not heavily influenced by social value. Nonetheless, two additional dimensions (self-identity and social influence) were included in the current study to examine symbolic value.

Furthermore, previous studies exposed the influences of social value in the acceptance of green hotel services among consumers who preferred to stay and revisit green hotels (Han & Kim, 2010; Chen & Peng, 2012; Lien et al., 2012; Teng, Wu, & Liu, 2015).

Apart from that, social image was revealed to be the third top determinant of green buying behaviour among young Hong Kong consumers (Lee, 2008). In other words, a consumer's decision was easily affected by social influences such as social image and status, individual thinking, and others' perception towards themselves.

As mentioned previously, social value, self-identity, and social influence are interrelated to each other. In today's world, consumers can easily search for a group of individuals who are actively discussing or sharing information or opinion regarding a specific product. For example, consumers create groups in Facebook (a social network) to gather individuals with the same interest to share information, such as the Doctoral Support Group formed to support doctorate or postgraduate students around the world. Therefore, this study included social value, self-identity, and social influence as additional dimensions for symbolic value to test the relationship with green purchase intention. Previous studies only relied on either social value or self-identity or social influence to predict green purchase intention. Nevertheless, as mentioned earlier, most previous studies did not report a substantial effect on green purchase intention. Hence, the multi-dimensions of symbolic value could create a better understanding of green purchase intention.

2.8.3. Emotional Value

Besides functional value and social value, another consumption value that measures decision-making behaviour is emotional value. Sheth et al. (1991) described it as 'the perceived utility acquired from an alternative's capacity to arouse feelings or affective states when customers experience the product or company's services positively' (p. 161). This implies that a consumer's feeling could be positive, negative or mixed and

the feeling is different among individuals based on various personal and emotional experiences (Sheth et al., 1991). This is how the emotional factor plays its role and coincidentally may interrupt the process of product selection.

Emotional value can also be described as any feelings and emotions from consumers when they use a product (Xiao & Kim, 2009). For instance, consumers might feel more secure using cosmetic products that are free from synthetic and animal ingredients. This is consistent with a previous study by Ahmad and Juhdi (2008) whereby consumers were reported to be concerned with the environment and having a healthy lifestyle, i.e. they exhibited more pro-environmental behaviours. Furthermore, consumers nowadays are more aware of green purchasing, which is associated with the concepts of protecting nature and promoting a healthy lifestyle. The emotions involved in this situation encourage consumers to choose green products as they feel that they are protecting the environment and contributing to sustainable development (Suki & Suki, 2015).

Additionally, emotional value denotes the capability of a product to provoke feelings or affective states (Sheth et al., 1991), that can be either positive (e.g., faithfulness, wistfulness, and enthusiasm) or negative (e.g., annoyance, anxiety, and guilt). Feelings are distinct types of emotional experience and expression by structural dimensions underlying the emotional category. People are connected to emotional responses every day. Emotional value is among the consumption values that stimulate consumers' decision in which a product can arouse feelings (Bødker et al., 2009). Past research (e.g., Lin & Huang, 2012; Lin et al., 2010; Wang et al., 2013) determined that emotional value positively affected consumer choice behaviour and behavioural intention.

2.8.4. Novelty Value

Novelty value is formed when a product or service stimulates intrigue, deliver uniqueness or novelty, and/or offer information (Sheth et al., 1991). Inquisitiveness and innovativeness are described by motivation theories as inducements that are part of human nature (Burcu & Seda, 2013). As such, marketing specialists had accepted that incentives of 'innovation and variety searching' influenced consumers' purchase predilections (Burcu & Seda, 2013). Several investigations (e.g., Lin & Huang, 2012; Lin et al., 2010; Wang et al., 2013; Williams & Soutar, 2009) discovered that epistemic or novelty value significantly affected consumer choice behaviour and behavioural intention.

This value is further defined as 'the perceived utility acquired from an alternative's capacity to arouse curiosity, provide novelty and/or satisfy a desire for knowledge. An alternative need epistemic value by questionnaire items by referring to curiosity, novelty, and knowledge.' (Sheth et al., 1991; p. 61). It is common for consumers to search and ask for product information before deciding to purchase a product. The seeking of product information can be due to the consumer being bored, curious or having the intensity to learn (Yeo, Mohamed, & Muda, 2016). Two elements that were described by motivation theories as incentives present in human nature were curiosity and innovativeness (Candan & Yıldırım, 2013). Thus, marketing specialists concluded that incentives of 'innovation and variety searching' influence a consumer's purchase decision (Candan & Yıldırım, 2013). Furthermore, Hessami and Yousefi (2013) stated that product knowledge plays an important role in product selection. For instance, young consumers planning to buy organic skin care products will seek extra information regarding the products' benefits, ingredients, etc. before making the

purchase. When consumers encounter new products, they will usually evaluate the information and then decide whether to buy the product (Lin & Huang, 2012).

According to Schiffman and Kanuk (1997), a variety of searching behaviours had emerged as the tendency for innovative purchasing, especially technological products. In certain contexts, epistemic value refers to novelty value (Wang et al., 2013). Nonetheless, novelty value in this study was a multi-dimensional value, which included product knowledge and environmental knowledge.

Knowledge has rarely been examined in terms of the environment. However, it is an important element to determine consumers' purchase intention. Knowledge is recognised in consumer research (Laroche, Bergeron, & Barbaro-Forleo, 2001) and influences each phase of the decision process (Alba & Hutchinson, 1987). Flamm (2006) defined knowledge as an accurate understanding of the issue under consideration. Most past studies had only included environmental knowledge (Afzaal & Israr, 2012; Jamaliah et al., 2013; Kanchanapibul, Lacka, Wang, & Chan, 2014; Ooi et al., 2012; Syaidatine Akila & Norazah, 2013; Vazifehdoust et al., 2013). Nevertheless, product knowledge can be a crucial aspect that affects the intention to purchase of consumers. According to Hessami and Yousefi (2013), product knowledge has a crucial role in new product selection. When consumers come across new products, they would assess the information they have before deciding whether to purchase the product (Lin & Huang, 2012). As the product becomes more complicated, extra information is essential before a purchase decision can be made.

Due to the contradictory findings from the extant literature, this present study tested the relationship between novelty value and attitude and green purchase intention. Therefore, environmental knowledge and product knowledge were included as additional dimensions of novelty value to predict green purchase intention. This is because knowledge plays a crucial role in the decision-making process, which influences green purchase intention.

2.8.5. Conditional Value

In the 1970s, the effect of conditional value on human behaviour was studied in the marketing discipline. As stated by Hansen (1972) and Belk (1974), the basic elements that described conditional value were 'time, place, and context' (as cited in Candan & Yıldırım, 2013). Nonetheless, Sheth et al. (1991) explained that conditional value was derived from external factors that caused changes in consumers' behaviour, yet the influence of decisions was due to the external environment. In brief, Sheth et al. (1991) defined conditional value as 'the perceived utility acquired by an alternative [as] the result of specific situation or set of circumstances facing the choice maker. An alternative need conditional value in the presence of antecedent physical or social contingencies that enhance its functional or social value' (p. 162).

Furthermore, conditional value is only reflected in products or services that are mainly used in a specific context (Wang et al., 2013). For example, the current market is highly focused on producing eco-friendly based products that are less harmful to consumers. Another example that reflects conditional value is greeting cards for special events and ceremonies such as birthdays or weddings. With regards to green products, conditional value may influence the consumers' selection as much as they consider environmental

consequences while making their purchase decisions (Lin & Huang, 2012). In addition, previous studies determined that consumers bought products due to certain circumstances and conditions (Bayer & Ke, 2013; Samson & Voyer, 2014).

Conditional value is the advantages deduced or gained in a certain circumstance an individual making a preference had come across (Sheth et al., 1991). In general, conception of conditional value by consumers is unknown until the condition that will alter the behaviour arises (Burcu & Seda, 2013). This value was shown to be the most influencing predictor of consumers' choice behaviour (e.g., Lin & Huang, 2012; Lin et al., 2010). For example, certain products only have seasonal value, like greeting cards, while others are needed for once in life events, such as a wedding dress, whereas some are utilised only in emergencies, such as hospital services. Holbrook (1994) assumed that conditional value is reliant on the context in which the value judgment happens. Conditional value is available only for products or services with a value firmly attached for use in a specific context (Wang et al., 2013). It could be derived from temporary functional or social value (Sheth et al., 1991); therefore, it appears when the situation creates a necessity. For instance, as environmental problems have become serious, a need for green products to overcome this situation is created.

Additionally, conditional value is one of the important predictors of green purchase behaviour since cash rebate or government subsidy always grabs the attention of consumers and thus encourage them to explore the products or services. The government is the largest consumer in any society (Hessami & Yousefi, 2013). Therefore, the government's role is significant in driving consumers' decision-making. Lin et al. (2010) and Lin and Huang (2012) discovered that conditional value positively

influenced consumers' choice behaviour. According to Sheth et al. (1991), attitude or intention alone is not enough to precisely predict behaviour. Not only that, conditional value also plays a vital role in determining purchase behaviour. Hence, conditional value in terms of cash rebate and government subsidy might influence green purchase intention and it could be a reason for consumers to purchase the electric car in Malaysia.

2.9. The Mediating Role of Consumers' Attitude toward the Relationship between Consumption Values and Intention to Purchase Electric Vehicle

Besides being a predictor for green purchase intention, the concept of attitude has been widely given a central role in scientific attempts to understand human thought and behaviour. According to Teng, Wu, and Huang (2014), both attitude and behaviour are derived from values, which are the most abstract among social cognition. A person's attitude is one of the key aspects that determine behaviour (Ajzen, 2005), while his or her perceived value, directly and indirectly, influences attitudinal factors (Tudoran, Olsen, & Dopico, 2009).

Attitude serves as a mediator for the relationship between values and behavioural intentions. Based on theories such as TRA, TPB, and value-attitude-behaviour model (e.g., Bem, 1970; Eagly & Chaiken, 1993; Heberlein, 1981) and past causal research (e.g., Fulton, Manfredo, & Lipscomb, 1996; Homer & Kahle, 1988), there is an indication that attitude mediates the relationship between value and behaviour. According to Homer and Khale (1988), value indirectly influenced behaviour through attitude in the cognitive hierarchy model. The influence of attitude, as a mediator, towards the relationship between value and behaviour is supported by previous studies. These investigations encompass a broader range of consumer behaviours, such as selection of leisure activities (Beatty, Kahle, Homer, & Misra, 1985), acquisition of

automobile (Henry, 1976), use of mass-media (Becker & Connor, 1981), products choice criteria (Pitts & Woodside, 1983), and wildland conservancy (Vaske & Donnelly, 1999). Other than that, are mall shopping behaviour (Shim & Eastlick, 1998), e-shopping behaviour (Jayawardhena, 2004), effect of green labels (Bjork, 1998), and ecological behaviour (Milfont, Duckitt, & Wagner, 2010). This indicates that attitude has a mediating role in the relationship between values and behaviours.

Homer and Kahle (1988) found that attitude mediated the relationship between value and food shopping behaviour. On the other hand, Honkanen, Verplanken, and Olsen (2006) determined that attitude mediated the relationship between ethical values and intention to eat organic food. However, another research reported that it was possible that attitude only partially mediated the relationship between value and behaviour or intention if subjects did not have a well-formed attitude (Honkanen & Verplanken, 2004). Regardless, the mediating role of consumers' attitude towards the relationship between value and behaviour is established and thus included in this value-behaviour model.

2.10. Research Model Development

The relevant literature on well-known concepts and studies that have been discussed helped in the development of this study's research model. Figure 2.2 shows the developed model, illustrating the independent variable (consumption values), mediator (consumers' attitude towards the electric car), moderator (infrastructure readiness), and dependent variable (intention to purchase electric car). There were six direct antecedents of green purchase intention in this study, i.e. consumers' attitude, functional value, symbolic value, emotional value, novelty value, and conditional

value. Consumption values were anticipated to have direct and indirect relationships with intention to purchase electric car. Meanwhile, consumers' attitude towards the electric car was anticipated to have a direct relationship with intention to purchase electric car and a mediating role for the relationship between consumption values and intention to purchase electric car. Besides, infrastructure readiness was believed to influence the relationship between consumers' attitude towards the electric car and intention to purchase electric car.

It was expected for consumption values to have a direct relationship with consumers' attitude towards the electric car. Consumption values (functional, symbolic, emotional, novelty, and conditional) were hypothesised to directly and positively predict consumers' attitude towards the electric car (Hessami & Yousefi, 2013). In other words, consumption values, directly and indirectly, predicted the intention to purchase electric car through consumers' attitude towards the electric car. Thus, consumers' attitude towards the electric car acted as a positively significant mediator for the relationship between consumption values and green purchase intention (Hessami & Yousefi, 2013).

Furthermore, infrastructure readiness acted as a moderator for the relationship between consumers' attitude towards the electric car and intention to purchase electric car. The research model was mainly based on the Theory of Consumption Values, the underpinning theory in this study. Consumers' attitude towards the electric car and infrastructure readiness were included as new contributions to the model to enhance the productiveness of green purchase intention. The research model is depicted in Figure 2.2.

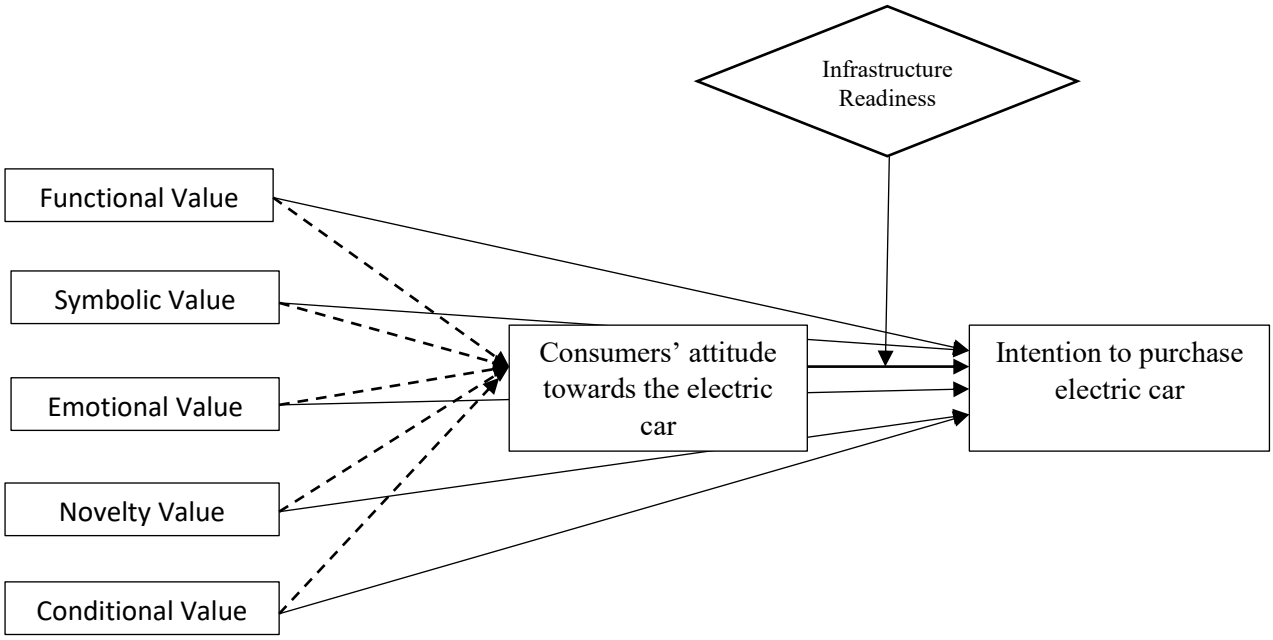

Figure 2.2
Research Model

Notes:

Direct relationship between Independent Variables and Dependent Variable

Indirect relationship between Independent Variables, Mediator and Dependent Variable

2.11. Development of Research Hypotheses

In this section, the relationship between the constructs of the study and the relationship between the independent and dependent variables will be discussed.

2.11.1. The Relationship between Functional Value and Intention to Purchase Electric Car

Functional value is consumers' perception of the price and quality of a product. It also refers to the perceived utility attained from an alternative's capacity for functional, utilitarian or physical performance. An alternative gains functional value via the acquirement of salient functional, utilitarian or physical characteristics. Functional value is measured on a profile of choice qualities (Sheth et al., 1991). Suki (2013) determined that consumers considered the price and quality before purchasing products. Price can be the most salient functional value (Wen et al., 2015). In consumers' product selection process, their awareness of price significantly influences their purchasing

decision of green products (Suki, 2013). The relationship between quality (Ladhari et al., 2011) and price (Bennett, 2011) has been under investigation for several decades; nevertheless, the relationship between these variables and consumer outcomes concerning eco-friendly products has not been broadly examined (Isaacs, 2015). Additionally, functional value is measured by consumers' perception of product performance as durability, permanence, dependability, reliability, price, and quality. It is evaluated as the principal driver of consumer choice behaviour in product purchase decision (Sheth et al., 1991; Bei & Simpson, 1995, Chang et al., 2016). Several empirical studies also exposed that functional value was an important determinant of purchase behaviour (Goncalves et al., 2016; Hessami & Yousefi, 2013, Wong et al., 2018, Thome et al., 2018, Eid & El-Gohary, 2015). Thus, it was hypothesised that:

H_1: Functional value positively affects consumers' intention to purchase electric car.

2.11.2. The Relationship between Symbolic Value and Intention to Purchase Electric Car

Symbolic or social value concerns the perceived utility based on association with one or more social groups. Social pressure is a crucial motivator for consumer choice (Sheth et al., 1991; Bei & Simpson, 1995). Nonetheless, some studies advocated that consumers' decisions were more affected by personal aspects like attitude and personality traits compared to social norms or pressure. Environmental behaviours are stimulated by a sense of social responsibility (Kashdan, 2013). Kumar and Ghodeswar (2015) contended that consumers would be inspired if their environmental contributions were recognised or applauded by others. Green products' social value can be described as the perceived net utility based on green product consumption according to the perception of social pressure or prestige gain via participation in environmental saving

(Jager, 2006; Biswas & Roy, 2015, Goolaup & Mossberg, 2017). Social pressure or comparisons and peer opinion (Baker & Ozaki, 2008, Choe & Kim, 2018) are the main factors in decision-making (Baddeley, 2011, Yeap et al., 2019). Biswas and Roy (2015) reported a heavy influence of social groups and of the desire for social recognition on the consumption behaviour of the consumer segment displaying a preferential approach with green credential. Previously, researchers had found that consumers' purchase decision was influenced by their peers, family, self-identity, and other social factors (Baddeley, 2010; Othman, 2011). Based on this, the present study hypothesised that:

H_2: Symbolic value positively affects consumers' intention to purchase electric car.

2.11.3. The Relationship between Emotional Value and Intention to Purchase Electric Car

Emotional value is the measure of consumers' feelings towards green products. It is the perceived utility arising from a product or service that induces emotions or affective states. This value affects green consumers' behaviour (Finch, 2006; Lin & Huang, 2012, Shaw et al., 2016, Yeap et al., 2019). Consumers are changing their consumption pattern and going green as their protective feeling towards the environment rises (Kilbourne & Pickett, 2008, Prebensen & Xie, 2017). Besides that, recent studies discovered that individuals with higher New Environmental Paradigm (NEP) scores were most likely to display pro-environmental behaviour. Consumers' emotions presented towards protecting the environment and enhancing individual responsibility will generate green purchase decisions (Rex & Baumann, 2007, Kim & Choe, 2019). Kanchanapibul et al. (2014) reported that emotional values played a vital role in exposing individual's correlated behaviour in every situation and it seemed that aggressive behaviour dominated their participation in ecological and environmental

activities. Previous findings further showed that various feelings, particularly of personal safety (Cerjak et al., 2010, Khan & Mohsin, 2017), guilt (Azoury & Salloum, 2013; Young et al., 2010, Liu, 2016), and ganerativity (Paco et al., 2013) directly influenced consumer behaviour and could guide consumers towards sustainable purchasing. As such, it was hypothesised that:

H_3: Emotional value positively affects consumers' intention to purchase electric car.

2.11.4. The Relationship between Novelty Value and Intention to Purchase Electric Car

Novelty value encompasses the desire for information or inquisitiveness regarding a product (Sheth et al., 1991). Novelty value was used to replace epistemic value in this study since both have the same definition. Lin and Huang (2012) and Lin et al. (2010) revealed that epistemic value of green products had a significantly positive impact on consumers' choice behaviour. A similar outcome was gained in various contexts like mobile application (Wang et al., 2013, Wong et al., 2018) and adventure tourism (Williams & Soutar, 2009, Yeap et al., 2019).

Sheth et al. (1991) further elaborated that epistemic value concerns the perceived utility due to a product or service stimulating the want for information and offering originality. Regarding green products, epistemic values like product characteristics and product design significantly affected consumer behaviour (Lin & Huang, 202). Consumers' purchasing of products is attributable to brand familiarity, attention to a new product or the eagerness to learn about a new product. The seeking of novelty relates to acquiring the skills to solve problems (Lin & Huang, 2012, Madaleno et al., 2017). Consumers' predisposition to fulfil their want for knowledge on a product's characteristics and ingenuity has a positive effect on consumer behaviour towards

purchasing green products (Tanner & Kast, 2003, Ji et al., 2016, Kim & Choe, 2019). Epistemic value forms when a person consumes or experiences new products or services, is bored with the current products, seeking something different or wants to fulfil his/her curiosity with something new (Choe & Kim, 2018). Additionally, epistemic value emphasises on a product's new features and its freshness and uniqueness; thus, this value can be attained by stimulating inquisitiveness. It includes novelty experience (visiting a new mall), creating a new product (an energy efficient environmentally friendly electric car), and satisfying the want for knowledge (experiencing other cultures). Proof to support that green consumers' behaviour is influenced by novelty value exists (Lin & Huang, 2012, Khan & Mohsin, 2017). Hence, this study proposed the following hypothesis:

H_4: Novelty value positively affects consumers' intention to purchase electric car.

2.11.5. The Relationship between Conditional Value and Intention to Purchase Electric Car

Conditional value is one of the important predictors of green purchase behaviour since cash rebate or government subsidy attracts consumers and encourages them to explore the products or services. Conditional value signifies utility derived in a specific circumstance. This value in terms of cash rebate and government subsidy might influence green purchase intention and be the reason for purchasing environmentally friendly products (Wen & Noor, 2015, Zailani et al., 2019). Consumer research acknowledged that changes in consumer situational variables could impact green product espousal (Saxena & Khandelwal, 2010; Niemeyer, 2010, Teoh & Nor Azila, 2015). A product or service gains this value because the existence of physical or social contingencies rises the functional or social value (Sheth et al., 1991). Furthermore, when

the value is firmly connected to the product or service's usage in specific contexts, the conditional value increases. Conditional value for green products can be operationalised as the net utility derived from green product consumption over traditional alternatives according to consumer's perceived readiness to receive personal advantages in the form of discounts or perception about situational variables leading to such consumption. Situational variables denote the conditions surrounding individuals based on their reaction to stimuli to fulfil their desires. Candan and Yildirim (2013) stated that the basic determinants for conditional factors were 'time, place, and context'. Previous empirical studies also evidenced that conditional value affected green purchase behaviour (Finch, 2006; Lin & Huang, 2012, Muhamad et al, 2019). As such, it was hypothesised in this study that:

H_5: Conditional value positively affects consumers' intention to purchase electric car.

2.11.6. The Relationship between Consumption Values and Consumers' Attitude towards the Electric Car

Consumption values is a multi-dimensional approach with five dimensions (functional, symbolic, emotional, novelty, and conditional) as identified by Sheth et al. (1991). Nevertheless, very few studies had scrutinised the connection between consumption values and attitude (Alesia et al., 2014; Nor Azila & Teoh, 2016). Researchers revealed a significant relationship between consumption values and attitude.

As maintained by Holbrook (1994), the implied criteria that shape consumers' preferences and evaluative judgments are influenced by their values. Long and Schiffman (2000) also referred to values as factors that direct judgments, attitudes and actions in addition to influencing the assessment of particular objects and situations. There has been

extensive support regarding the influence of values on making decisions and behaviours in favour of the environment (Kilbourne et al., 2008, Khurana et al., 2019). However, it can be argued that compared to the one-dimensional approach, studies have accentuated the multidimensional conceptualization of consumer values as a more significant element in predicting consumer decisions (Leroi et al., 2014, Mabit et al., 2015). Sheth et al. (1991) developed and set forth a theory of consumption values. According to this theory, behaviour is determined through five values. These values are categorized as the functional, social, emotional, conditional and epistemic values. Moreover, a green consumer's behaviour is shown to be influenced by Sheth et al.'s (1991) theory in the research of Han et al. (2017) and Jamrozy et al., (2017). Accordingly, the conceptualization of consumption values is supported in the present research.

H_6: Functional value positively affects consumers' attitude towards the electric car.

H_7: Symbolic value positively affects consumers' attitude towards the electric car.

H_8: Emotional value positively affects consumers' attitude towards the electric car.

H_9: Novelty value positively affects consumers' attitude towards the electric car.

H_{10}: Conditional value positively affects consumers' attitude towards the electric car.

2.11.7. Mediating Effect of Consumers' Attitude towards the Electric Car

Attitude has an intermediary role in the relationship between consumption values and green purchase intention. Follows and Jobber (2000) found that a relationship between values, attitude, and purchase intention existed. Besides that, Aman et al. (2012) and Vazifehdoust et al. (2013) investigated the effect of the mediator in the relationship between environmental factors and green purchase intention. They concluded that attitude was a significant mediator in that relationship.

Moreover, attitude towards buying organic skin or hair care products acted as a direct predictor of intention as well as a mediator between consumer values and intention to purchase, as reported by Kim and Chung (2011). The outcome of their study showed that attitude significantly mediated the relationship between consumer values and intention. Another example is Juharsah and Hartini's (2014) research, which demonstrated that attitude had a mediating role in the relationship between product knowledge and ethnocentrism on purchasing intention. Next, Nor Azila and Teoh (2016) revealed that functional and conditional values and consumers' attitude had a positive significant relationship with consumers' purchase intention, whereas emotional value influenced consumers' purchase intention via consumers' attitude. Therefore, the following hypotheses are proposed:

H_{11}: Consumers' attitude towards the electric car positively mediates the relationship between functional value and intention to purchase electric car.

H_{12}: Consumers' attitude towards the electric car positively mediates the relationship between symbolic value and intention to purchase electric car.

H_{13}: Consumers' attitude towards the electric car positively mediates the relationship between emotional value and intention to purchase electric car.

H_{14}: Consumers' attitude towards the electric car positively mediates the relationship between novelty value and intention to purchase electric car.

H_{15}: Consumers' attitude towards the electric car positively mediates the relationship between conditional value and intention to purchase electric car.

2.11.8. The Relationship between Consumers' Attitude toward the Electric Car and Intention to Purchase Electric Car

Several studies had established that attitude towards green products and environmental attitude were important predictors of green purchase behaviour (Punitha & Azmawani, 2011, Khurana et al., 2019). On the other hand, other studies had revealed that attitude towards green products and environmental attitude were predictors of green purchase intention (Kim & Chung, 2011; Ooi et al., 2012; Syaidatina Akila & Norazah, 2013; Tan, 2013; Vazifehdoust et al., 2013, Beck et al., 2017).

Punitha and Azmawani (2011) reported that in Malaysia, environmental attitude was the most important predictor influencing green purchase behaviour. Additionally, Vazifehdoust et al. (2013) concluded that attitude was the best predictor of the intention and behaviour to buy green products. Kim and Chung (2011) stated that consumers' attitude towards purchasing organic skin or hair care products, favourably influenced their intention to buy those products. Similarly, Tan (2013) discovered that attitude towards green and sustainable homes had a positive causal effect on behavioural intention. Not only that, Syaidatina Akila and Norazah (2013) concluded that attitude was crucial in determining an individual's intention as well as actual behaviour. Hence, the following hypothesis was developed:

H_{16}: Consumers' attitude towards the electric car is positively associated with consumers' intention to purchase electric car in Malaysia.

2.11.9. Moderating Effect of Infrastructure Readiness

Among the impediments towards electric car adoption among consumers are limited driving range and long recharging time (Garling & Thorgersen, 2001; Ustaoğluand Yildiz, 2012, Sang & Beckhet, 2014, Moon et al., 2018). Hence, fast-charging infrastructure will be advantageous in enabling long-range drives for electric vehicles and this could be vital to propel the market penetration of electric vehicles (Schroeder & Traber, 2012, Sang & Beckhet, 2015). Liu (2012) and Salah et al. (2017) supports this and suggests that the spatial distributions are mainly affected by charging demands or local refuelling, although there are numerous variations between electric vehicle charging infrastructure and petrol refuelling station. Apart from that, Dagsvik, Wennemo, Wetterwald, and Aaberge (2002) indicated that alternative fuel vehicles seemed to compete with other vehicles, as long as the refuelling infrastructure is available. Thus, infrastructure readiness has a vital role to boost market penetration and public acceptance of electric vehicles. Therefore, this study concluded that infrastructure readiness was a significant moderator. In addition, research on infrastructure readiness as a moderator for the relationship between consumers' attitude towards the electric car and green purchase intention has not been conducted yet. As such, based on the above discussion, a hypothesis was developed:

H_{17}: Infrastructure readiness moderates the relationship between consumers' attitude towards the electric car and consumers' intention to purchase electric car.

2.12. Summary of Hypotheses

Based on the research framework illustrated in Figure 2.2, the following hypotheses were formulated:

H_1	:	Functional value positively affects consumers' intention to purchase electric car.
H_2	:	Symbolic value positively affects consumers' intention to purchase electric car.
H_3	:	Emotional value positively affects consumers' intention to purchase electric car.
H_4	:	Novelty value positively affects consumers' intention to purchase electric car.
H_5	:	Conditional value positively affects consumers' intention to purchase electric car.
H_6	:	Functional value positively affects consumers' attitude towards electric car.
H_7	:	Symbolic value positively affects consumers' attitude towards electric car.
H_8	:	Emotional value positively affects consumers' attitude towards electric car.
H_9	:	Novelty value positively affects consumers' attitude towards electric car.
H_{10}	:	Conditional value positively affects consumers' attitude towards electric car
H_{11}	:	Consumers' attitude towards the electric car positively mediates the relationship between functional value and intention to purchase electric car.
H_{12}	:	Consumers' attitude towards the electric car positively mediates the relationship between symbolic value and intention to purchase electric car.

H_{13} : Consumers' attitude towards the electric car positively mediates the relationship between emotional value and intention to purchase electric car.

H_{14} : Consumers' attitude towards the electric car positively mediates the relationship between novelty value and intention to purchase electric car.

H_{15} : Consumers' attitude towards the electric car positively mediates the relationship between conditional value and intention to purchase electric car.

H_{16} : Consumers' attitude toward electric car is positively associated with consumers' intention to purchase electric car.

H_{17} : Infrastructure readiness moderates the relationship between consumers' attitude towards the electric car and consumers' intention to purchase electric car.

2.13. Summary of the Chapter

Based on the review of literature on green purchase intention, three important points are identified. Firstly, an investigation on green purchase intention of electric vehicle can help marketers and the government to understand the needs of consumers and predict the future of electric vehicle in Malaysia. Secondly, the majority of studies used TRA and TPB models to identify and determine the antecedents of green purchase intention. There are limited studies which used the Theory of Consumption Values model for green purchase intention in Malaysia. Finally, besides defining the five major variables that affect electric vehicle purchase intention, a further elaboration on the mediating role of consumers' attitude and the moderating effect of infrastructure readiness is needed.

Furthermore, this chapter also proposed a research model based on the Theory of Consumption Values. Seventeen (17) hypotheses are formulated based on the model with the aim to examine the relationship between attitude towards the electric car, electric car purchase intention, and consumption values (functional, symbolic, emotional, epistemic, and conditional) as well as the moderating effect of infrastructure readiness on the relationship between consumers' attitude towards the electric car and purchase intention of electric car. Lastly, this study also investigated consumers' attitude as a mediator for the relationship between consumption values and electric car purchase intention.

CHAPTER 3

RESEARCH METHODOLOGY

3.0. Overview of the Chapter

This chapter explains the approach of this investigation and justifies the methodology employed, such as the development of the research design, operationalisation of variables, identification and selection of the study sample, and description of the data collecting process. It ends with an explanation of the statistical methods utilised to examine the information collected.

3.1. Research Design

Research is a step-by-step procedure to provide a better comprehension of a problem or issue by collecting and analysing info and acquiring knowledge (Creswell, 2012; Matthews & Ross, 2010; Paniel, 2015). Research design is a work plan which includes the complete methodology in detail to make sure the collected data can accurately answer the research questions. As mentioned by Sekaran (2003), employing the correct approach will significantly strengthen the value of the research outcomes. Sekaran and Bougie's (2016) research model described the causal relationship amongst variables instead of describing variables as either cause or effect whereby the cause is the independent variable while the direction of the effect (dependent variable) can be either be positive or negative in nature. Therefore, to draw a powerful and convincing conclusion with the ability to answer the research questions, the research design should be planned according to the research problem, questions, objectives, and hypotheses.

Chisnall (2001) listed three types of research designs, namely exploratory, descriptive, and causal, categorised according to the study's purpose. Exploratory research gathers preliminary information that can assist in uncovering problems and suggesting hypotheses. It is conducted when only a few or no studies are available as reference while the researcher observed something that needs more understanding. On the other hand, descriptive research is performed to gain extra info and describe in detail what is happening. Finally, causal research explains and tries to comprehend the cause-and-effect between variables. According to Hair et al. (2011), a causal relationship means that a change in one event brings about a corresponding change in another event. Further, Hair et al. (2011) mentioned that causality means a change in x (the cause) makes a change in y (the effect) occur. These three designs are interconnected and can be merged for multiple purposes.

Based on the research objectives, this study intends to determine the antecedents of intention to purchase electric car in the automobile market with the mediating effect of consumers' attitude towards the electric car and moderating effect of infrastructure readiness. Therefore, this study is a causal research that looking for in testing cause-and-effect relationship between variables.

According to Hair, Bush, and Ortinau (2009), quantitative research approaches are frequently associated with descriptive and causal or explanatory research designs and occasionally with exploratory research design. Moreover, Zikmud et al. (2010) explained that a quantitative investigator will design a model based on the available literature and later assess it by collecting data. Since there is limited time for data gathering and the issue of cost, it is practical to employ the survey technique for this

study (Sekaran, 2000; Malhotra, 2007; Sekaran & Bougie, 2014). Thus, a survey was conducted to collect data from primary sources, which can answer the research questions. This is a cross-sectional study whereby data were collected once to answer the research questions.

3.2. Operational Definitions and Measurements

Operational definition is defined as the meaning or concept of variables or items that makes the variables or items measurable and able to be tested. In this research, all the variables were measured using several items extracted from past studies except respondents' profile. Nevertheless, wording of the items is adapted to suit the sample and local setting. To avoid confusion amongst respondents, all items are measured using a five - point Likert scale to ensure consistency. The scale ranged from '1=strongly disagree' to '5=strongly agree'.

Hence, the operational definition and measurement for this study are explained below:-

3.2.1 Intention to purchase Electric car

The proposed measure for intention to purchase electric car is adapted from Kanchanapibul et al. (2014). In this study, intention to purchase electric car is operationalised as consumers' intention to purchase electric car. Nik Ramli (2009) defined consumers' intention as consumers' readiness and willingness to make a purchase. This variable consisted of six (6) items on a five -point Likert scale with reliability of 0.796. The items used to measure consumers' purchase intention of electric car are presented in Table 3.1.

Table 3.1
Items to Measure Intention to Purchase Electric Car

	Item
1.	I intend to purchase an electric car because it is environmentally friendly.
2.	I intend to purchase an electric car even though it is more expensive than a conventional car.
3.	I intend to purchase an electric car over a conventional car when their product qualities are similar.
4.	I feel that I will play a great part in helping the environment if I drive an electric car.
5.	I feel more comfortable if I drive an electric car rather than a conventional car.
6.	I intend to buy an electric car in the near future.

Source: Adapted from Kanchanapibul et al. (2014).

3.2.2 Consumers' attitude toward electric car

Understanding consumers' attitude is crucial in relation to their intention to purchase electric car. It is important to recognise the connection between consumers' attitude and their concern for the environment in the purchase of an environmentally friendly product like the electric car. Hence, consumers' attitude towards the electric car is operationalised as their attitude towards the electric car and their concern about environmental climate. The measure for consumers' attitude towards the electric car is adapted from Han, Hsu, and Sheu (2010), while consumers' attitude towards the environment is adapted from Lee (2009) and Hong et al. (2012). In addition, consumers' attitude towards the electric car refers to whether consumers have a favourable or unfavourable response to the electric car. This variable comprised eleven (11) items on a five-point Likert scale.

The reliability scales for the items are modified from Han et al. (2010), Hong et al. (2012), and Lee (2009), which ranged from 0.807 to 0.950. Table 3.2 shows the items used to measure consumers' attitude towards the electric car.

Table 3.2
Items to Measure Consumers' Attitude towards the Electric Car

Item	
Attitude towards the electric car	
1.	I like the electric car because it is good.
2.	I like the electric car because it is desirable.
3.	I like the electric car because it is pleasant.
4.	I like the electric car because it is wise.
5.	I like the electric car because it is favourable.
6.	I like the electric car because it is enjoyable.
7.	I like the electric car because it is reliable.
Attitude towards the environment	
8.	It is essential to promote electric car in Malaysia.
9.	Electric car reduces the effect of climate change.
10.	Electric car preserves the environment.
11.	Electric car reduces the pollution level.

Source: Adapted from Han et al. (2010), Hong et al. (2012), and Lee (2009).

3.2.3 Infrastructure readiness towards electric car

Infrastructure readiness is considered a necessity to improve electric vehicle acceptance. Lack of infrastructure will cause the spread of electric car usage to face hitches throughout the execution phases. Since the electric car has limited mobility range, it is vital to build enough charging infrastructures to motivate people to change to electric car. In this research, infrastructure readiness is measured with a five-point Likert scale modified from the scale employed by Sang and Bekhet (2015) and consisted of five (5) items. The reliability scale for this adapted measurement was 0.713. The items utilised to measure infrastructure readiness are listed in Table 3.3.

Table 3.3
Items to Measure Infrastructure Readiness

Item
1. I would not purchase an electric car if there are no public charging stations.
2. I would always be worried about running out of charge when driving an electric car.
3. I prefer charge my car at home without the need to charge at public charging stations.
4. Public charging stations need to be as near as possible to my home or my workplace.
5. Public full recharging of an electric car should be done in the shortest time possible.

Source: Adapted from Sang and Bekhet (2015).

3.2.4 Functional value towards electric car

Functional value is the principal motivator of consumer choice and is conceptualised as the value obtained in terms of price, quality and maintenance cost. Consumers are easily affected by factors of price, quality, and after-sales service, which is the maintenance cost of the product. As such, it is equivalent between the physical performance or attributes of a product or service and the money paid to buy or utilise it. The physical performance and characteristics include price, quality, and maintenance cost. Therefore, the measurement for functional value proposed in this study is adapted from Lin and Huang (2012). A total of ten (10) items were adapted for this dimension on a five-point Likert scale.

This value represented the value of physical performance or attribute of the electric car. The reliability was 0.780, i.e. above the minimum requirement of 0.500. Items utilised to measure functional value are depicted in Table 3.4.

Table 3.4
Items to Measure Functional Value

Item
Price
1. Electric car offers value for money.
2. Electric car is reasonably priced.
Quality
3. Electric car performs better.
4. Electric car is well made.
5. Electric car has an acceptable standard of quality.
6. Electric car performs consistently.
Maintenance Cost
7. Plug-in hybrid electric car has better fuel efficiency.
8. Electric car will lower my maintenance cost.
9. Electric car allows economical driving.
10. Plug-in hybrid electric car consumes less petrol.

Source: Adapted from Lin and Huang (2012).

3.2.5 Symbolic value towards electric car

Symbolic value is operationalised by three dimensions, i.e. social value, social influence, and self-identity, as adapted from Teoh and Nor Azila (2015). Social value is described as the benefits that consumers can receive when they interact with others about the electric car. On the other hand, social influence refers to the changes in individual thinking, feelings, attitude, and behaviour because of the influence of other individuals or groups (Rashotte, 2007). Self-identity is defined as self-perception with certain traits, habits, possessions, relationships, and behaviour (Schiffman & Kanuk, 1997). In other words, self-identity is how we see ourselves and how we think other people see us. This variable comprised twelve (12) items on a five-point Likert scale. The reliability scale of the adapted measurements was 0.930. The items utilised to measure symbolic value are listed in Table 3.5.

Table 3.5
Items to Measure Symbolic Value

Item	
Social Value	
1.	If I buy an electric car, most people who are important to me will disapprove it.
2.	If I buy an electric car, most people who are important to me will appreciate it.
3.	If I buy an electric car, most people who are important to me will find it desirable.
4.	If I buy an electric car, most people who are important to me will not support it.
Social Influence	
5.	I learned so much about the electric car from my friends and family.
6.	Most members of my friends and family will expect me to buy an electric car.
7.	I will follow the advice of my family that I should buy an electric car.
8.	My friends recommended to me that I should buy an electric car.
Self-identity	
9.	Buying an electric car would have a negative effect on my self-image.
10.	Buying an electric car would say something positive about myself.
11.	Buying an electric car would say something positive about what I stand for.
12.	I feel proud of being a green person.

Source: Adapted from Teoh and Nor Azila (2015).

3.2.6 Emotional value towards electric car

Emotional value is also adapted from Teoh and Nor Azila (2015). This value is the positive or negative feeling aroused when using a product or service. The feeling can be fear or confidence, safety or danger, excitement or boredom, or happiness or sadness. Emotional value consisted of eight (8) items on a five-point Likert scale in this study with the reliability scale was 0.955. Table 3.6 presents the items used to measure emotional value.

Table 3.6
Items to Measure Emotional Value

	Item
1.	Buying an electric car will give me a feeling of well-being.
2.	Buying an electric car is exciting.
3.	Buying an electric car will make me feel satisfied.
4.	Buying an electric car will make me feel happy.
5.	Buying an electric car will give me feelings of making a good personal contribution towards something better.
6.	Buying an electric car will give me feelings of doing the morally right thing.
7.	Buying an electric car will give me feelings of being a better person.
8.	I emotionally support the electric car.

Source: Adapted from Teoh and Nor Azila (2015).

3.2.7 Novelty value towards electric car

It is a normal situation in which consumers search and ask for product knowledge before deciding to purchase a product. The seeking of product knowledge could be due to the consumers having the desire to learn about the consequences of using a product on the environment. Thus, novelty value refers to information searching and knowledge about a product or service as well as the effect of utilising a product or service on the environment. The measure for novelty value proposed in this study is adapted from Lin and Huang (2012). It comprised six (6) items on a five-point Likert scale. The reliability scale was 0.870. The items utilised to measure novelty value are listed in Table 3.7.

Table 3.7
Items to Measure Novelty Value

Item
Product Knowledge
1. Before buying an electric car, I will obtain substantial information about the different makes and models of the product.
2. I will acquire a great deal of information about the different makes and models before buying an electric car.
3. I am willing to seek novel information about the electric car.
4. I like to search for new and different information about the electric car.
Environmental Knowledge
5. I appreciate that electric cars could reduce the pollution level.
6. I know that electric cars could reduce environmental harm.

Source: Adapted from Lin and Huang (2012).

3.2.8 Conditional value towards electric car

Finally, conditional value is operationalised as an add-on value or benefit to a product's functional and social values. Specifically, it refers to the value or extra benefits given to consumers when buying a product or service. The benefits, such as discounts, promotions, free gifts, subsidies or exemptions, are offered by the manufacturers or the government. This measure is adapted from Lin and Huang (2012) and the dimension consisted of five (5) items on a five-point Likert scale. The reliability for Lin and Huang's (2012) scale was 0.870. The items utilised to measure conditional value are presented in Table 3.8.

Table 3.8
Items to Measure Conditional Value

Item
1. I will buy an electric car under worsening environmental condition.
2. I will buy an electric car when there is a subsidy from the government for the electric car.
3. I will buy an electric car when there is a discount rate for the electric car.
4. I will buy an electric car when there is a promotional activity for the electric car.
5. I will buy an electric car when the electric car is available.

Source: Adapted from Lin and Huang (2012).

Since this research is conducted to determine consumers' intention to purchase electric car, the demographic information collected comprised gender, age, monthly income, occupation, and education level. For all the questions, respondents are required to choose among the choices and write in the given space. This study's summary measures of the variables are tabulated in Table 3.9.

Table 3.9

Summary of Measures of the Variables

Variable	Scale	No. of items	Source
Intention to purchase an electric car	Likert scale 1–5	6	Kanchanapibul et al. (2014)
Consumers' attitude towards the electric car	Likert scale 1–5	11	Han et al. (2010), Hong et al. (2012), Lee (2009)
Infrastructure readiness	Likert scale 1–5	5	Sang and Bekhet (2015)
Functional value	Likert scale 1–5	10	Lin and Huang (2012)
Symbolic value	Likert scale 1–5	12	Teoh and Nor Azila (2015)
Emotional value	Likert scale 1–5	8	Teoh and Nor Azila (2015)
Novelty value	Likert scale 1–5	6	Lin and Huang (2012)
Conditional value	Likert scale 1–5	5	Lin and Huang (2012)

3.3. Study Population and Sample

Information can be acquired through various ways. In an ideal situation, a researcher would prefer to gather information from all the individuals in a population under scrutiny. This is known as statistics but most of the time it is not possible or practical. Thus, an example of the population is drawn (Hair et al., 2011). Based on Cooper and Schindler (2003), sampling is performed due to its lower cost, greater accuracy of the

outcome, speedy statistics compilation, and accessibility of the selected population. Furthermore, some of the factors in the sample population can be generalised to the whole population.

The population of this study comprised of consumers aged 25 years and above and living in Peninsular Malaysia. The reason for choosing consumers aged 25 years and above is because the study context involved in high-end product category, so those target populations are suitable because they have higher disposable income and they need a car as transportation. Furthermore, these groups of people are more focus on a car performance, value, quality and risk as consideration to measure when they intend to purchase a car (Choy, Ng, & Ch'ng, 2011). Consumers who visited the showrooms of Nissan, BMW, and Mercedes Benz in the Klang Valley were targeted. This area is picked due to its heavy traffic flow and the population there represented nearly a quarter of Malaysia's population.

The Klang Valley is the main example of the passenger car population in Malaysia with nearly 50% of the total industry volume coming from Klang Valley (MAA, 2017). This signified that a sample from the Klang Valley could represent the total population. Moreover, in the Klang Valley, there are more urban agglomerations compared to the rest of the states. Thus, there is a sufficient sample size available for selection. Additionally, it is also not practical to include the whole of Malaysia due to budget and time constraints (Saunders, Lewis, & Thornhill, 2003). Therefore, the major cities located in the Klang Valley, i.e. Kuala Lumpur, Klang, Ampang, Subang Jaya, Petaling Jaya, and Shah Alam (City Population, 2017), are selected for this study.

The showrooms of Nissan, BMW, and Mercedes Benz were chosen because these companies are the three major car producers and sellers of electric cars in Malaysia with car models such as Nissan Leaf, BMW 330e, BMWi3s EV, Mercedes Benz C300e and Mercedes Benz S560e. Furthermore, according to Capgemini (2011), individuals or consumers who visit showrooms are considered serious buyers and not curious buyers. Therefore, the questionnaires were distributed to people who come to the showrooms as they are more likely to buy a new vehicle in comparison to those who do not.

According to the official websites of Nissan, BMW, and Mercedes Benz, there are a total of forty five (45) showrooms in the Klang Valley, as shown in Table 3.10. All the showrooms are included in this study to avoid possible bias and inconsistency.

Table 3.10
Number of Showrooms in Klang Valley

City	Brand	Number of Showrooms
Kuala Lumpur	Nissan	6
	BMW	6
	Mercedes Benz	3
Ampang	Nissan	3
	BMW	1
	Mercedes Benz	1
Klang	Nissan	4
	BMW	1
	Mercedes Benz	1
Shah Alam	Nissan	4
	BMW	1
	Mercedes Benz	1
Subang Jaya	Nissan	3
	BMW	2
	Mercedes Benz	2
Petaling Jaya	Nissan	3
	BMW	1
	Mercedes Benz	2
Total Showroom		**45**

Cohen's Rule of Thumb recommended a minimum sample size of 228 for five arrows pointing at one construct (Hair, Hult, Ringle, & Sarstedt, 2014). Apart from that, Roscoe (1975) noted that 30 to 500 participants would be enough for most behavioural investigation. Therefore, the minimum sample size for this study is set at 228. Moreover, referring to Nor Azila et al. (2014), Mohd Nazri et al. (2013), and Sudarsan and Urchenna (2012), the response rate for intercept method is about 56.44%. Hence, to achieve the minimal sample size of 228, 404 sets of questionnaires were distributed.

3.4. Data Collection Procedure

The sampling method used in this research is systematic stratified sampling. In this method, sample is drawn based on the fixed periodic interval within the stratum. Samples are selected from each stratum depending on the population (Hair et al., 2009). In other words, more samples will be acquired in larger strata. There are two stages to identify the respondents. First, the population is divided into stratum or group or in this study specific cities. Thereafter, the sample is draw from each city based on the population size from the selected showrooms in Klang Valley.

In this study, the population is split into groups based on the major cities in the Klang Valley and the population in each city. Next, the minimum sample size for every city is calculated according to the 2010 census in each city (City Population, 2017). Thus, 404 sets of questionnaires were distributed to attain a minimum sample size of 228. The number of questionnaires distributed to each showroom is provided in Table 3.11.

Table 3.11
Sample Size for Each Showroom

City	Population	Minimum sample size for each city	Number of questionnaires to be sent	Number of showrooms in each city	Number of questionnaires sent to each showroom	Total number of questionnaires distributed
Kuala Lumpur	1,453,975	(1,453,975/4,618,790)*228 = 72	128	15	8	123
Ampang	574,300	28	50	5	10	50
Klang	879,867	43	77	6	13	78
Shah Alam	481,654	24	42	6	7	42
Subang Jaya	708,296	35	62	7	9	63
Petaling Jaya	520,698	26	45	6	8	48
Total	**4,618,790**	**228**	**404**	**45**		**404**

As mentioned earlier, data were gathered via a self-administered questionnaire through the intercept method in chosen showrooms in the Klang Valley. Intercept method has been widely used to collect survey data, especially in marketing research (Gates & Solomon, 1982). Intercept is an essential method, especially for research to be conducted in a timely and effective manner (Rice & Hancock, 2005). Conducting the intercept method in the selected showrooms is more appropriate for this study. This is because individual consumers who visit showrooms show higher intention than individual consumers who visit the mall. Therefore, the systematic intercept method is carried out at the selected showrooms. After the population was stratified, a sample is draw using a systematic sampling procedure.

From personal observations made at one of the Nissan showrooms, approximately seven to twelve customers entered the showroom on weekdays, while for weekends it more than fifteen customers entered the showroom. The respondents were intercepted as they left the showroom. The researcher handed the questionnaire in person by approaching the consumers who visited the chosen showrooms and requested them to participate. Following the procedures of systematic sampling (Hardon, Hodgkin, & Fresle, 2004), every third consumer who exited the selected showroom is approached. The questionnaire is distributed for more than one month and the time frame to complete data collection from all showrooms is within three months. Once the questionnaires were distributed in a showroom according to the number shown in Table 3.11, the researcher moved on to the next showroom.

The questionnaire was accompanied by the researcher's cover letter that requested a quick response and research contract guaranteeing full anonymity. All the respondents were provided enough time to finish and return the completed questionnaire to the researcher on the spot. This is to reduce the number of non-returned questionnaires. The questionnaire is available in Appendix A.

3.5. Pilot Study

Before the pilot study was conducted, content validity test was carried out. The purpose of this test is to examine the degree of the assessment instruments used are relevant to, and representative of, the targeted constructs they are designed to measure. Two professors from local universities and one practitioner who is expert in automobile industry were given the questionnaire and they were asked to review and provide

comments on the suitability of the instruments used. All of them agreed that the instruments used were suitable and cover what they supposed to measure.

Thereafter, with a convenience sample of 30 participants, consisting of companions, neighbours or office associates, a pilot study was carried out. Sekaran (2000) stated that a pilot study is done to rectify any deficiencies in the final instrument preceding information collection and to identify challenges in wording and interpretation. Moreover, a reliability test for each instrument is performed to determine the use of the pilot test to gain information on the importance of the instruments.

The reliability test was conducted to assess the scales' internal consistency using Cronbach's alpha reliability coefficient. In general, reliability ranging from 0.741 to 0.949 is enough for research needs (Nunnally, 1978; Hair et al., 1995; Pallant, 2001), so the scales can be assumed to be highly reliable (refer to Table 3.12). Each respondent spent roughly 20 minutes to answer the entire questionnaire. Appendix A shows the eight (8) pages long final version of the questionnaire.

Table 3.12

Reliability Coefficient for Multiple Items in the Pilot Study (n=30)

Variable	**Alpha (α)**
Electric car purchase intention	0.863
Consumers' attitude towards the electric car	0.949
Infrastructure readiness	0.741
Functional value	0.836
Symbolic value	0.866
Emotional value	0.925
Novelty value	0.879
Conditional value	0.874

3.6. Data Analysis

Structural Equation Modelling (SEM) is a combination of statistical modelling that studies the relationship between latent constructs (Hair, Black, Babin, & Anderson, 2010). SEM is employed in this study to analyse data due to the complexity of the model. Additionally, there was a need for analysis of mediating and moderating effects. Furthermore, SEM is also used to analyse causal relationships between latent variables that elucidate variations in exogenous constructs, which affect endogenous constructs.

During the selection of a research methodology, SEM is one of the methods to be considered, especially for research on issues connected to social and behavioural sciences (Baumgartner & Homburg, 1996). SEM has two major roles. First is the measurement, i.e., how the reliability and validity of conditions are fulfilled, what needs to be measured, and how to measure them. Second is causal relationships among variables and the explanation due to the complexity of the variables that are unobserved (Hair et al., 2010).

3.6.1. Descriptive Analysis

Data analysis was performed using descriptive and inferential statistics. Descriptive analysis will be conducted with SPSS version 23, which tried to elucidate the overall understanding of respondents' profile by summarising the data, by providing different types of tabular presentations, and attempting to describe the data by presenting various outcomes' frequency of occurrence (Agresti & Finlay, 2009).

SEM is chosen for inferential analysis to make predictions from the data due to several reasons. First, SEM simultaneously examines all equations and then attempts to determine the extent and direction of relationships amongst the variables. Secondly, it considers the measurement errors. Thirdly, it enables the modelling of complex models. Finally, it is supported by Hair et al. (2010) for the highest precision to date. Therefore, this study conducted inferential analysis using variance-based SEM through SmartPLS 3.2.8 software developed by Ringle, Wende, and Will (2005). SmartPLS 3.2.8 can easily analyse different kinds of measures and it does not have any assumptions.

3.6.2. Structural Equation Modelling (SEM)

The basic goal of SEM is to simultaneously describe the configuration of a chain of inter-linked dependent interactions amongst latent or unobserved variables, in which each interaction is measured by observed variables (Hair et al., 2010; Schumacker & Lomax, 2010). According to Schumacker and Lomax (2012), SEM uses several kinds of models to explain the relationship among observed variables, with the key aim of quantitatively testing a theoretical model hypothesised by the researcher. Besides that, SEM is regarded as a confirmatory technique instead of an exploratory one.

Besides analysing latent constructs, SEM also seeks to facilitate other kinds of investigations, which include variance and covariance estimation, linear regression, hypothesis testing, and confirmatory factor analysis (CFA) (Jöreskog & Sörbom, 1996). Hair et al. (2010) and Kline (2005) stated that SEM can measure uni-dimensionality and concurrently measure reliability and validity. Moreover, SEM provides the overall assessment of a model's fitness along with testing of the individual parameters. Hence, it is the most appropriate model for the data collected in this study. Therefore, this study

depended on SEM and CFA.

SEM has two approaches, namely covariance-based SEM (CBSEM) and variance-based SEM (VBSEM) (Chin, 1998) and the differences between these two approaches are presented in Table 3.13.

Table 3.13
Comparison between Covariance-based SEM and Variance-based SEM (PLS)

Criterion	**Covariance-based SEM**	**Variance-based SEM (PLS)**
Objective	Parameter-oriented	Prediction-oriented
Approach	Covariance	Variance
Assumption	Parametric	Non-parametric
Implication	Optimal for parameter estimation	Optimal for prediction
Parameter estimates	Indeterminate	Explicitly estimated
Model complexity	Small to moderate complexity	Large complexity
Sample size	200–800	Minimum 20–100

3.7. Partial Least Squares (PLS) Analysis

PLS analysis is divided into two stages i.e. measurement model and structural model. In this study, the measurement model stage involved the evaluation of validity and reliability of each variable's items, whereas the structural model stage involved the evaluation of relationship amongst the latent constructs in which the hypotheses formed in this study were tested.

SmartPLS cannot utilise the natural excel file or directly import data from SPSS; the file utilised in SmartPLS must be in the .csv format. Thus, the .csv file will be extracted from SPSS after the descriptive analysis. In the first stage, the convergent validity and discriminant validity are analysed, as explained in the next section, followed by a

discussion on the structural model.

3.7.1. Convergent Validity

Convergent validity refers to the degree the correlation between the measures within the same construct is more compared to other constructs (Hair et al., 2014). To evaluate it, an evaluation of the measurement model will be performed, which included factor loading, composite reliability, and average variance extracted (AVE) (Hair et al., 2014). Factor loading will be examined first. Fornell and Larcker (1981) stated that each item's loading greater than 0.70 is considered adequate. Furthermore, Hair et al. (2014) suggested that items with loadings under 0.40 should be removed whereas loadings above 0.70 are acceptable. Items with loadings between 0.40 and 0.70 are removed if the deletion increased reliability and AVE.

Next, the internal reliability consistency was tested. Composite reliability shows the degree to which a set of items consistently indicate the latent construct (Hair et al., 2010). Based on Hair et al. (2014), in exploratory research, values of 0.60 to 0.70 are acceptable, whereas those between 0.70 and 0.90 are considered satisfactory.

To establish convergent validity of the outer model, the AVE values will be examined. The AVE measures the variance captured by the construct relative to variance due to measurement errors (Fornell & Larcker, 1981). AVE values must be higher than or equal to 0.50 and this indicated that on average, half of the variance of its indicators were explained by the construct (Hair et al., 2014). Barclay, Higgins, and Thompson (1995) stated that an AVE value of at least 0.50 has an adequate convergence in measuring the concerned construct. If the AVE values are lower than 0.50, the

constructs convergent validity becomes questionable.

3.7.2. Discriminant Validity

Discriminant validity refers to the level a construct is truly unlike other constructs by empirical standards (Hair et al., 2014). Thus, it is necessary to perform discriminant validity to ensure the individuality of every construct, which is not characterised by other constructs in the model. Fornell-Larcker's method and cross-loading are used in this study to assess discriminant validity.

Through Fornell-Lacker's method, the square root of AVE values and the latent variable correlations were compared (Hair et al., 2014), i.e. the square root of the AVE for all the constructs was positioned at the diagonal elements of the correlation matrix. On the other hand, cross-loading is another method where the loadings of indicators should load more on its own construct compared to others.

The outer model's discriminant validity was confirmed when the diagonal elements are higher compared to other elements of the row and column in which they are positioned. It is presumed that findings relating to the hypotheses testing must be valid and reliable by establishing the outer models construct validity.

3.7.3. Path Coefficient Estimation

A PLS path model comprise two models, namely measurement and structural, also known as the outer and inner model, respectively, in the context of PLS-SEM (Hair et al., 2014). A measurement model connects the manifest variables (MVs) to their latent variables (LVs), whereas structural model associates endogenous latent variables to

other latent variables. Besides that, the measurement model shows the connections between constructs and the indicator variables, while the structural model exhibits the associations between the constructs. Standardised path coefficient was employed to assess the hypothesised relationship among the constructs.

3.7.4. Structural Path Significance in Bootstrapping

PLS-SEM relies on a non-parametric bootstrap technique to assess the significance of path coefficient (Hair et al., 2014). T-statistics is generated for significance testing of both the inner and outer models in this method. In bootstrapping, many subsamples are retrieved from the original sample with replacement (Hair et al., 2014) to produce bootstrap standard errors that will generate approximate t-values for significance testing of the structural path.

This research employed a bootstrapping method to infer whether the path coefficients were statistically significant. To run bootstrapping, 5,000 subsamples were utilised. By using the bootstrapping technique, t-values accompanying each path coefficient were generated followed by the p-values. These p-values were calculated using a function of TDIST (t-value;df;tails) in Microsoft Excel.

3.7.5. Prediction Relevance of the Model

In assessing the magnitude of R^2 values as an aspect of predictive relevance, Stone-Geisser's Q^2 value was also examined for predictive accuracy (Geisser, 1974 and Stone, 1974, as cited in Hair et al., 2014). R^2 values of endogenous variables are common in the multivariate data analysis literature, which accounts for a variable's variance that is explained by the predictor variables.

On the other hand, the Q^2 value can be attained via blindfolding, a sample reuse approach that removes certain data points and assumes the data points as missing values in the endogenous construct's indicators and estimates the parameters. Then, the estimated parameters are used to reconstruct the raw data assumed to be missing previously.

There are two different approaches to calculate the Q^2 value. Nonetheless, the cross-validated redundancy approach perfectly fits the PLS-SEM approach (Hair et al., 2014), whereby PLS-SEM estimates for both structural and measurement models for data prediction are used by cross-validated redundancy. As such, this research employed cross-validated redundancy as a measure of Q^2. The model is assumed to have predictive validity if the Q^2 values were more than 0 (Hair et al., 2014). In contrast, if the Q^2 values are equal to or lower than 0, the model's predictive relevance cannot be concluded (Hair et al., 2014). The estimated Q^2 values represented a measure of how well the path model predicted the originally observed value (Hair et al., 2014).

3.8. Summary of the Chapter

This chapter elaborated the quantitative research design applied in this research. Each variable's operationalised definitions and measurements are described in this chapter also. Next, proportionate stratified sampling, applied to determine the sample size, and the intercept method, utilised for data collection, are also explained. Apart from that, the chapter also dealt with the validity issues using a pilot test. It also discussed the population, sample, and data collection techniques. Additionally, the statistical tools utilised to analyse the data are discussed in this chapter too.

CHAPTER 4

DATA ANALYSIS AND FINDINGS

4.1 Chapter Overview

This chapter reports the findings of the research. The chapter begins with the explanation on the survey response rate and respondents' demographic variables (gender, age, monthly income, occupation, education level, districts stay and brand choices). Besides, normality test and linearity test carried out are discussed. This study has employed a two-stage approach, which is the measurement model and structural model. Measurement model was carried out to examine the convergent validity and discriminant validity whereas the structural model was examined by applying a five-step assessment. The hypothesis was tested in the first step. Finally, the mediating effects on consumers' attitude towards electric cars and the moderating effect on infrastructure readiness are reported.

4.2 Response Rate

For data collection purposes, 404 sets of questionnaires were distributed to consumers in the Klang Valley. The returned questionnaire sets were 283 and out of these sets only 264 sets were useable which shows a response rate of 70.05%. However, 19 questionnaires were returned to the researcher because they were incomplete. The number of questionnaires usable was 264 which represents 65.35% and the sample size obtained is adequate to run the analysis by using PLS .Table 4.1 illustrates the response rate and usable questionnaires. This response rate is comparable to previous studies in

the automotive industry specifically the electric car. The response rate of similar studies was 69.2 percent (Sang & Bekhet, 2015).

Table 4.1
Summary of Total Questionnaires and Response Rate

The sample size of the study	**404**
Returned questionnaires	283
Returned and incomplete questionnaires	19
Returned and usable questionnaires	264
Response rate	70.05%
Usable response rate	65.35%

4.3 Demographic Profile of Respondents

This section shows the profile of respondents participated in this study. The purpose of collecting demographic profile of each respondent is to provide insight into the subjects and assist in interpreting the results of the study. Table 4.2 presents the details on demographic profile of respondents.

This study comprises of 147 (55.70 percent) male respondents and 117 (44.30 percent) female respondents. The population of the study comprises of consumers aged 25 years and above. The majority of the respondents are at the age of 41 to 50 years (45.50 percent), 31 to 40 years (25.40 percent), 25 to 30 years (15.50 percent) and 51 years and above (13.60 percent).

In terms of academic qualification, 89 respondents are Bachelor's Degree holders; 68 respondents are Master's Degree holders; 52 respondents are Diploma holders; 37 respondents are secondary certificate holders; 11 respondents are Doctorate holders and 7 respondents possess professional qualifications such as ACCA, CIMA, CLP and etc.

In terms of monthly income, 137 (51.90 percent) respondents earn between RM5,000 to M7,000; 53 (20.10 percent) respondents earn between RM10,001 to RM15,000; 47 (17.80 percent) respondents earn between RM7,001 to RM10,000; 16 (6.10 percent) respondents earn between RM15,001 to RM20,000 and 11 (4.20 percent) respondents earn above RM20,001. On respondents' employment sector, most of them are from the private sector (74.20 percent) and government sector (12.90 percent). Self-employed, retired or pensioners and others such as students comprised 9.10 percent, 1.10 percent and 2.70 percent respectively.

Based on the electric car brands, respondents' preferred brands are Mercedes Benz C300e (19.30 percent); Tesla S (17.40 percent); Nissan Leaf (14.40 percent); and BMW 330e (14.40 percent). Respondents are also in favour of BMW i3s EV, Mercedes Benz S560e Volvo T90e and Renault Zoe which makes up to 11.40 percent, 10.20 percent and 12.90 percent respectively.

Table 4.2
Demographic Profile of Respondents (n=264)

Variable	Category	Frequency	Percentage
Gender	Male	147	55.7
	Female	117	44.3
Age	25 – 30 years	41	15.5
	31 – 40 years	67	25.4
	41 – 50 years	120	45.5
	51 years & above	36	13.6
Education	Secondary Level	37	14.0
	Diploma	52	19.7
	Bachelor's Degree	89	33.7
	Master's Degree	68	25.8
	Doctorate	11	4.2
	Professionals Qualification	7	2.7
Marital Status	Single	56	21.2
	Married	204	77.3
	Divorced/Widowed	4	1.5
Occupation	Government Servant	34	12.9
	Private Sector	196	74.2
	Self-Employed	24	9.1
	Retired or Pensioner	3	1.1
	Others	7	2.7
Race	Malay	214	81.1
	Chinese	19	7.2
	Indian	31	11.7
Monthly Income	RM5,000 – RM7,000	137	51.9
	RM7,001 – RM10,000	47	17.8
	RM10,001 – RM15,000	53	20.1
	RM15,001 – RM20,000	16	6.1
	Above RM20,001	11	4.2
District Stay	Kuala Lumpur	139	52.7
	Petaling Jaya	28	10.6
	Subang Jaya	15	5.7
	Shah Alam	51	19.3
	Klang	17	6.4
	Ampang	14	5.3
Brand Choices	Nissan Leaf	38	14.4
	Tesla S	46	17.4
	BMW 330e	38	14.4
	BMW i3s EV	30	11.4
	Mercedes Benz C300e	51	19.3
	Mercedes Benz S560e	27	10.2
	Others Brand	34	12.9

4.4 Data Coding and Data Entry

According to Hair et al. (2009), the questionnaire instruments are grouped and assigned values. Items in the questionnaire are coded by identifiable codes comprising alpha numerals. The intention to purchase electric car was coded as IP. For example, the first question for the intention to purchase electric car was coded as IP1, the next question was coded as IP2 and the sequence follows.

Consumers' attitude towards electric car was coded as CA while infrastructure readiness was coded as IR. Likewise, functional value, symbolic value, emotional value, novelty value and conditional value were coded as FV, SV, EV, NV and CV respectively. Upon completion on data coding, the responses were entered accordingly into SPSS version 23.

4.5 Data Screening and Cleaning

After the data were entered into SPSS version 23, the researcher carried out data screening and cleaning. According to Pallant (2005), this involves detection of errors in the data collected, in the form of missing and out of range values. Out of range means the value entered into SPSS version 23 are not within the scale used in this study. For example, this study used a five-point Likert scale. The values should be within one to five. The summary of cases processed is the minimum, maximum, valid and missing value of each items in this study. This is indicated in Appendix B. There is no missing and out range value in this study.

4.6 Descriptive Statistics Analysis

Descriptive analysis provides researchers a detailed idea about the respondents' responses for each constructs in the study. A descriptive analysis is conducted to describe and summarize the characteristics of each construct namely the intention to purchase electric car, consumers' attitude towards the electric car, infrastructure readiness, functional value, symbolic value, emotional value, novelty value and conditional value, through mean and standard deviation. Table 4.3 illustrates the findings of descriptive statistics of the constructs in this study.

The minimum and maximum value represents the Likert scale used in this study. The minimum value of all the construct is one (1.00) and maximum value is five (5.00). Most of the variables have the average mean value from 3.1506 to 4.2336; and the standard deviation ranges from 0.58279 to 0.77674. The score of standard deviation implies that there is variability in answering the questions among respondents. The minimum and maximum responses of each construct are also presented in Table 4.3. All constructs are above the acceptance level of implementation and at a satisfactory level. Besides, the mean has shown that the level of intention to purchase electric car and consumers' attitude towards electric car. Both are above the average level. The level of intention to purchase electric car and consumers' attitude towards the electric car tend to be high.

Table 4.3
Descriptive Statistics of the Constructs

Construct	Minimum	Maximum	Mean	Std. Deviation
Intention to purchase electric car	1.33	5.00	3.7304	.69066
Consumers' attitude toward the electric car	1.55	5.00	3.8285	.68262
Infrastructure readiness	2.00	5.00	4.1598	.60043
Functional value	1.00	5.00	3.5989	.70858
Symbolic value	1.00	5.00	3.1506	.58279
Emotional value	1.00	5.00	3.7434	.77674
Novelty value	2.67	5.00	4.2336	.61245
Conditional value	1.40	5.00	3.9136	.65267

The comparison between demographic variables (i.e. gender, age, monthly income, occupation, education level and brand choices) and the intention to purchase electric car is not included in the research objectives. However, the analysis is meaningful to provide a better understanding about the characteristics of future electric car buyers. Hence, independent t-test and one-way ANOVA were carried out. The results are shown in Table 4.4 and Table 4.5

Table 4.4
Independent Samples T-Test between Gender and Intention to Purchase Electric Car

Gender	Mean	F-Value	Significance
Male	3.7460	1.044	0.308
Female	3.7108		

Table 4.5

One-Way ANOVA between Demographic Profile and Intention to Purchase Electric Car

Variable	Category	Mean	F-value	Significance
Age	25 – 30 years	3.8130	1.308	0.272
	31 – 40 years	3.7687		
	41 – 50 years	3.6431		
	51 years & above	3.8565		
Education	Secondary Level	3.8333	1.441	0.210
	Diploma	3.7821		
	Bachelor's Degree	3.7191		
	Master's Degree	3.6127		
	Doctorate	4.1061		
	Professionals Qualification	3.5000		
Marital Status	Single	3.7411	2.568	0.079
	Married	3.7426		
	Divorced/Widowed	2.9583		
Occupation	Government Servant	4.1029	3.724	0.006
	Private Sector	3.6786		
	Self-Employed	3.5625		
	Retired or Pensioner	4.2778		
	Others	3.7143		
Race	Malay	3.7321	2.477	0.086
	Chinese	3.4474		
	Indian	3.8925		
Monthly Income	RM5,000 – RM7,000	3.7652	2.657	0.033
	RM7,001 – RM10,000	3.5177		
	RM10,001 – RM15,000	3.7767		
	RM15,001 – RM20,000	3.5937		
	Above RM20,001	4.1818		
District Stay	Kuala Lumpur	3.7638	0.313	0.905
	Petaling Jaya	3.6964		
	Subang Jaya	3.7667		
	Shah Alam	3.6373		
	Klang	3.6961		
	Ampang	3.8095		
Brand Choices	Nissan Leaf	3.6711	2.344	0.032
	Tesla S	3.8696		
	BMW 330e	3.6930		
	BMW i3s EV	3.9444		
	Mercedes Benz C300e	3.6078		
	Mercedes Benz S560e	3.9383		
	Others Brand	3.4804		

Based on Table 4.4 and Table 4.5, the occupation group is found to have significant differences with the intention to purchase electric car. The retired or pensioners, and the government servants are more likely to purchase electric car.

4.7 The Rationale behind Choosing PLS-SEM

The purpose of this study is to examine the relationship among latent variables. Hence, SEM is an appropriate method for multiple relationship of dependent and independent variables (Hair et al., 2010). There are two techniques for latent analysis, namely covariance-based SEM (CBSEM) and variance-based SEM (VB SEM). To choose the most appropriate technique, normality test is needed as CBSEM is appropriate for normally distributed data while VB SEM is able to serve non-normally distributed data.

4.7.1 Assumption of Normality

Normality is used to describe a symmetrical, bell-shaped curve that has the highest frequency scores towards extremes in the small and middle frequencies (Pallant, 2005). The assessment of the normal distribution of the scores for independent and dependent variables can be obtained by accessing the skewness and kurtosis values as suggested by Pallant (2005). The scale and measures can be either skewed positively or negatively, especially in social sciences (Pallant, 2005). Kurtosis is a score to measure the distribution that represents the degree to which the observations gather around the central mean.

Kline (1998) suggests a cut-off point for skewness value to be within the range of -3 and +3. On the other hand, Coakes and Steed (2003) establish the range for kurtosis

value between -3 and +3. The skewness value for this study fall within the acceptable range proposed by Kline (1998), which is not accepted by Hair et al. (2010). This is because Hair et al. (2010) suggest the skewness value must be within -1 and +1. However, based on Hair et al. (2010), there are some kurtosis value for example, symbolic value in this study is not within the range of -1 and +1 as shown in Table 4.6.

Based on the results, some skewness and kurtosis values deviate from being normally distributed. Therefore, this study employed PLS-SEM. This is because PLS-SEM does not require normally-distributed input data.

Table 4.6
Results of Skewness and Kurtosis for Normality Test

Factor	Skewness		Kurtosis	
	Statistic	Std. Error	Statistic	Std. Error
Intention To Purchase	-.389	.150	.356	.299
Consumers' Attitude	-.394	.150	.391	.299
Infrastructure Readiness	-.425	.150	-.127	.299
Functional Value	-.163	.150	.893	.299
Symbolic Value	.336	.150	1.542	.299
Emotional Value	-.250	.150	.183	.299
Novelty Value	-.395	.150	-.598	.299
Conditional Value	-.307	.150	.100	.299

4.8 Model Specification

The original study model included 63 reflective measurement indicators (MVs or items) for eight (8) variables (LVs or constructs). This includes functional value, symbolic value, emotional value, novelty value, conditional value and consumers' attitude towards the electric car. These are categorized as independent variables. The intention to purchase electric car is categorized as dependent variable. Consumers' attitudes towards the electric car was hypothesized as the mediator while infrastructure readiness

as the moderator in the relationship between consumers' attitude towards electric car and intention to purchase electric car. Figure 4.1 shows the original research model of this study.

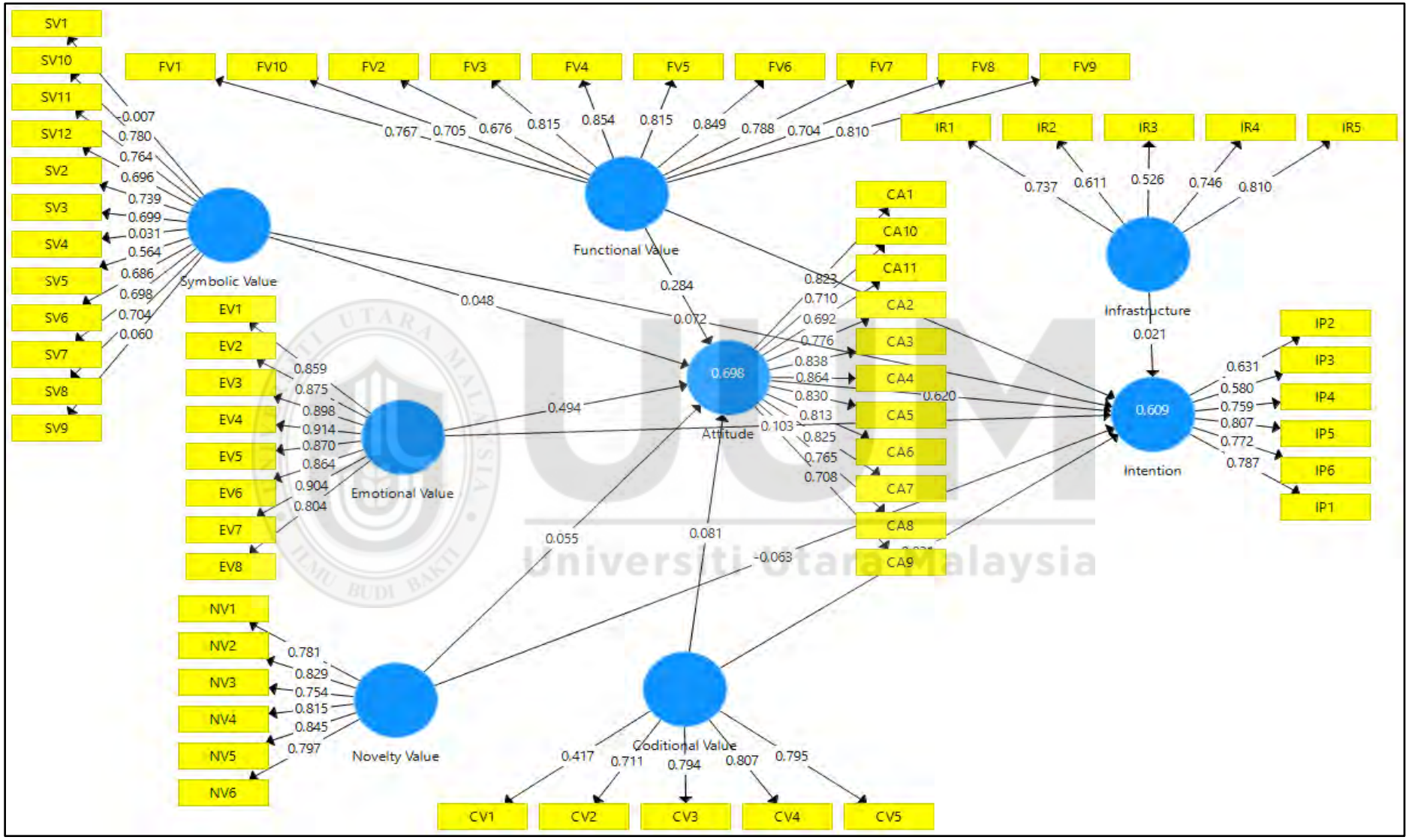

Figure 4.1
The Research Model

4.9 Measurement Model

Smart PLS 3.2.8 was used as the tools for PLS-SEM. As mentioned earlier, this study follows a two-step approach: measurement model (outer model); and structural model (inner model). Before testing the hypotheses, the measurement model is also called as outer model was accessed first. The measurement model specifies the relationship between constructs. According to Hair et al. (2014), two types of validity are assessed under the measurement model. They are convergent validity and discriminant validity. To examine convergent validity, reliability analysis is included. This is explained in the following section.

4.9.1 Convergent Validity and Reliability

Convergent validity is the degree to which the measure correlates positively with other measures of the same construct (Hair et al., 2014). Convergent validity and reliability are assessed as the first step in the measurement model. To assess convergent validity, factor loadings and AVE are assessed. To examine the reliability of the construct, composite reliability is considered. Indicator reliability refers to the outer loadings of the items. According to Hair et al. (2014), loadings below 0.4 should be eliminated while above 0.7 are acceptable. Loadings in between 0.4 and 0.7 should be removed from the scale if the deletion leads to an increase of composite reliability and AVE.

AVE is a measure to confirm the convergent validity of the outer model. AVE is defined as the average variance extracted from a particular construct's items in relation to the variance shared with the errors of measurement. In other words, AVE values show how much the construct explains the variance of its indicators or items. The recommended

AVE value should be above 0.5, indicating that the constructs explains more than half of the variance of its indicators (Hair et al., 2014).

The last aspect to establish convergent validity is composite reliability (CR). CR refers to the degree to which a set of items consistently indicate the latent construct (Hair et al., 2014). Higher values of CR indicate higher levels of reliability. According to Hair et al. (2014), the recommended value for CR is above 0.7.

Based on Table 4.7, several items (SV1, SV12, SV4, SV5, SV9, FV2, CV1, CV2, IR2, IR3, IP2, IP3, CA11, CA10, CA9 and CA8) were deleted due to low loading which is below 0.7 in their respective constructs.

Table 4.7
Convergent Validity Analysis

Construct	Item	Loading	CR	AVE
Intention to purchase electric car	IP1	0.791	0.878	0.643
	IP4	0.780		
	IP5	0.821		
	IP6	0.814		
Consumers' attitude toward electric car	CA1	0.842	0.954	0.749
	CA2	0.831		
	CA3	0.898		
	CA4	0.879		
	CA5	0.887		
	CA6	0.867		
	CA7	0.851		
Infrastructure Readiness	IR1	0.767	0.836	0.630
	IR4	0.746		
	IR5	0.863		
Functional Value	FV1	0.759	0.938	0.630
	FV3	0.813		
	FV4	0.854		
	FV5	0.823		
	FV6	0.856		
	FV7	0.798		
	FV8	0.706		
	FV9	0.813		
	FV10	0.704		
Symbolic Value	SV2	0.750	0.894	0.546
	SV3	0.715		
	SV6	0.714		
	SV7	0.732		
	SV8	0.736		
	SV10	0.767		
	SV11	0.758		
Emotional Value	EV1	0.858	0.963	0.764
	EV2	0.876		
	EV3	0.899		
	EV4	0.915		
	EV5	0.869		
	EV6	0.863		
	EV7	0.904		
	EV8	0.805		
Novelty Value	NV1	0.776	0.916	0.646
	NV2	0.827		
	NV3	0.756		
	NV4	0.819		
	NV5	0.846		
	NV6	0.796		

Table 4.7
Convergent Validity Analysis (Continued)

Construct	Item	Loading	CR	AVE
Conditional Value	CV3	0.721	0.835	0.630
	CV4	0.777		
	CV5	0.876		

After deletion, the loadings for each item in the construct were above 0.7. The AVE values ranged between 0.546 and 0.764 which are above the recommended values, indicating a good level of construct validity of the measures used (Barclay et al., 1995). The CR ranged between 0.835 and 0.963 which exceeded the recommended value of 0.7 as mentioned above. Therefore, the results confirm the convergent validity of the measurement model or outer model of this study.

4.9.2 Discriminant Validity

Next, discriminant validity was assessed. Discriminant validity is the degree to which a construct is truly different from other constructs. Therefore, establishing discriminant validity is mandatory to ensure the uniqueness of each construct and to avoid overlapping constructs where the phenomena is not represented by other constructs in the model (Hair et al., 2014). In addition, items of each construct should be loaded more on its own construct in the model. The average variance shared between each construct and its measures should be greater than the variance shared between the construct and other constructs (Fornell & Larcker, 1981; Compeau, Higgins & Huff, 1999). Two measures of discriminant validity are proposed by Hair et al. (2014). First, is examining discriminant validity through cross-loading of the indicators. Fornell-Lacker's (1981) criterion is the second measure for discriminant validity.

To examine discriminant validity by cross-loading factors, the loadings for all the items designed to measure a particular construct which should be higher on their respective construct than other constructs. Table 4.8, shows all the items' loadings in a respective construct which are higher than the other constructs.

Table 4.8
Cross-Loadings

Items	Intention to Purchase to purchase electric car	Consumers' Attitude toward the electric car	Infrastructure Readiness	Functional Value	Conditional Value	Emotional Value	Novelty Value	Symbolic Value
IP1	**0.791**	0.525	0.198	0.484	0.408	0.510	0.376	0.370
IP4	**0.780**	0.517	0.240	0.393	0.409	0.560	0.438	0.404
IP5	**0.821**	0.701	0.087	0.605	0.296	0.551	0.172	0.529
IP6	**0.814**	0.603	0.190	0.436	0.340	0.556	0.278	0.395
CA1	0.675	**0.842**	0.185	0.641	0.379	0.647	0.371	0.548
CA2	0.578	**0.831**	0.181	0.532	0.389	0.616	0.316	0.492
CA3	0.654	**0.898**	0.204	0.576	0.405	0.654	0.306	0.540
CA4	0.665	**0.879**	0.257	0.596	0.429	0.679	0.356	0.563
CA5	0.666	**0.887**	0.176	0.585	0.421	0.647	0.278	0.528
CA6	0.622	**0.867**	0.111	0.601	0.369	0.629	0.297	0.590
CA7	0.605	**0.851**	0.170	0.657	0.410	0.681	0.350	0.562
IR1	0.159	0.111	**0.767**	0.182	0.340	0.188	0.307	0.044
IR4	0.133	0.147	**0.746**	0.159	0.230	0.158	0.233	0.095
IR5	0.212	0.230	**0.863**	0.223	0.313	0.273	0.458	0.116
FV1	0.462	0.489	0.223	**0.759**	0.373	0.567	0.351	0.532
FV3	0.501	0.576	0.063	**0.813**	0.256	0.558	0.271	0.576
FV4	0.519	0.610	0.208	**0.854**	0.341	0.611	0.341	0.589
FV5	0.515	0.612	0.286	**0.823**	0.353	0.600	0.397	0.524
FV6	0.495	0.625	0.151	**0.856**	0.285	0.602	0.265	0.587
FV7	0.486	0.606	0.241	**0.798**	0.414	0.576	0.452	0.505
FV8	0.422	0.458	0.106	**0.706**	0.308	0.457	0.315	0.428
FV9	0.497	0.519	0.182	**0.813**	0.372	0.578	0.378	0.501
FV10	0.397	0.394	0.277	**0.704**	0.402	0.506	0.489	0.397

Table 4.8
Cross-Loadings (Continued)

Items	Intention to Purchase to purchase electric car	Consumers' Attitude toward the electric car	Infrastructure Readiness	Functional Value	Conditional Value	Emotional Value	Novelty Value	Symbolic Value
CV3	0.173	0.220	0.313	0.195	**0.721**	0.299	0.428	0.168
CV4	0.209	0.273	0.287	0.212	**0.777**	0.342	0.383	0.191
CV5	0.518	0.491	0.311	0.480	**0.876**	0.544	0.430	0.440
EV1	0.580	0.625	0.223	0.602	0.470	**0.858**	0.439	0.618
EV2	0.584	0.674	0.231	0.630	0.479	**0.876**	0.410	0.625
EV3	0.599	0.697	0.249	0.652	0.459	**0.899**	0.430	0.652
EV4	0.649	0.748	0.250	0.706	0.516	**0.915**	0.450	0.669
EV5	0.586	0.659	0.264	0.628	0.452	**0.869**	0.496	0.616
EV6	0.572	0.590	0.226	0.564	0.467	**0.863**	0.543	0.584
EV7	0.599	0.650	0.214	0.603	0.469	**0.904**	0.474	0.660
EV8	0.570	0.600	0.220	0.566	0.457	**0.805**	0.463	0.558
NV1	0.201	0.250	0.471	0.292	0.429	0.297	**0.776**	0.180
NV2	0.249	0.239	0.421	0.306	0.451	0.322	**0.827**	0.171
NV3	0.252	0.262	0.339	0.312	0.377	0.388	**0.756**	0.284
NV4	0.299	0.316	0.342	0.375	0.409	0.447	**0.819**	0.297
NV5	0.401	0.337	0.314	0.386	0.390	0.486	**0.846**	0.322
NV6	0.374	0.361	0.292	0.446	0.422	0.522	**0.796**	0.329
SV2	0.420	0.474	0.172	0.494	0.337	0.586	0.323	**0.750**
SV3	0.345	0.448	0.152	0.434	0.290	0.509	0.306	**0.715**
SV6	0.385	0.434	-0.057	0.432	0.200	0.393	0.056	**0.714**
SV7	0.368	0.433	0.026	0.496	0.302	0.457	0.168	**0.732**
SV8	0.362	0.435	0.029	0.450	0.239	0.420	0.094	**0.736**
SV10	0.444	0.540	0.116	0.567	0.333	0.663	0.414	**0.767**
SV11	0.426	0.487	0.110	0.494	0.304	0.621	0.348	**0.758**

Further, Fornell-Larcker's (1981) criterion was used to measure discriminant validity. This method is the most conservative approach which compares the square root of the AVE with the latent variable correlations (Hair et al., 2014). Table 4.9 shows the values in the diagonal are higher than other values in the same row and column. This indicates that the measurements have discriminant validity.

Table 4.9

Discriminant Validity Analysis – Fornell-Larcker's Criterion

Construct	Conditional Value	Consumers' Attitude toward Electric car	Emotional Value	Functional Value	Infrastructure Readiness	Intention to Purchase Electric Car	Novelty Value	Symbolic Value
Conditional Value	**0.794**							
Consumers' Attitude toward Electric car	0.463	**0.865**						
Emotional Value	0.539	0.752	**0.874**					
Functional Value	0.430	0.692	0.710	**0.794**				
Infrastructure Readiness	0.373	0.213	0.269	0.241	**0.794**			
Intention to Purchase Electric Car	0.448	0.738	0.678	0.604	0.217	**0.802**		
Novelty Value	0.510	0.376	0.528	0.450	0.437	0.384	**0.804**	
Symbolic Value	0.390	0.632	0.714	0.654	0.110	0.534	0.340	**0.739**

Note: Diagonals represent the square root of the average variance extracted while the other entries represent the correlations

4.10 Structural Model

After confirming the constructs' measures are reliable and valid, the second step was to access the structural model. In other words, hypotheses relationships between the construct were examined as well as measures of predictive capabilities.

4.10.1 Multicollinearity Test

The first step in structural model is to examine the structural model's multicollinearity. This test is significant to be employed prior to model testing (Hair et al., 2010) as it shows the existence of relapse in the correlation matrix, wherein the independent variable is significantly correlated with another of its kind. According to Hadi, Abdullah & Ilham, (2016); Kwong and Wong, (2013) collinearity issue is able to be identified by using SPSS which the correlation value is below 0.9 and tolerance values higher than 0.2 together with VIF values lower than 5.

However, in Smart PLS 3.2.8 collinearity is able to be identified (Ringle et al., 2015) from the quality criteria. According to Hair et al., (2014), VIF statistics are important for the inner model and formative outer (measurement) models. If there is only reflective measures, then using the inner model VIFs is sufficient but with formative measures, should assess the VIFs, the indicators of the formative measures (Hair et al., 2014).

Table 4.10 presents two (2) models highlighting collinearity statistics for all the independent variables. With regards to the VIF values, they range between 1.308 and 3.688 and below than 5 (Hair et al., (2014). The results indicate that multicollinearity issues do not exist.

Table 4.10
Multicollinearity Test

Model	Variables	Collinearity Statistics (VIF)
Consumers' attitude to the electric car	Intention to purchase electric car	2.691
Infrastructure Readiness		1.308
Functional Value		2.509
Symbolic Value		2.327
Emotional Value		3.688
Novelty Value		1.733
Conditional Value		1.648
Functional Value	Consumers' attitude to the electric car	2.269
Emotional Value		3.091
Symbolic Value		2.263
Novelty Value		1.575
Conditional Value		1.569

4.10.2 Structural Model Path Coefficient

The second step in structural model is the path coefficient. It was tested by using SmartPLS 3.2.8 to run the PLS Algorithm. The path coefficient (refer to Figure 4.2) represents the hypothesized relationship between the constructs and its standardized value is between -1 and +1 (Hair et al., 2014). The same scholars mention that the estimated path coefficient close to +1, means there is as strong positive relationship between the construct and vice versa.

Standard error was used to determine the significance of coefficient. Bootstrapping technique was used to obtain the standard error value in Smart PLS 3.2.8 (refer to Figure 4.3). To run bootstrapping, the researcher used 5,000 samples with 264 cases. The t-values accompanying each path coefficient was generated using bootstrapping as reported in Table 4.11. When the t-value is larger than the critical value in a certain error probability, then the coefficient is considered significant. For two-tailed tests, the critical values are 1.96 at significance level of 0.05 or five percent; while 2.57 for significant level of 0.01 or one percent (Hair et al., 2014). Researchers usually refer to five percent significant level for marketing research and one percent significant level for consumer research studies (Hair et al., 2014).

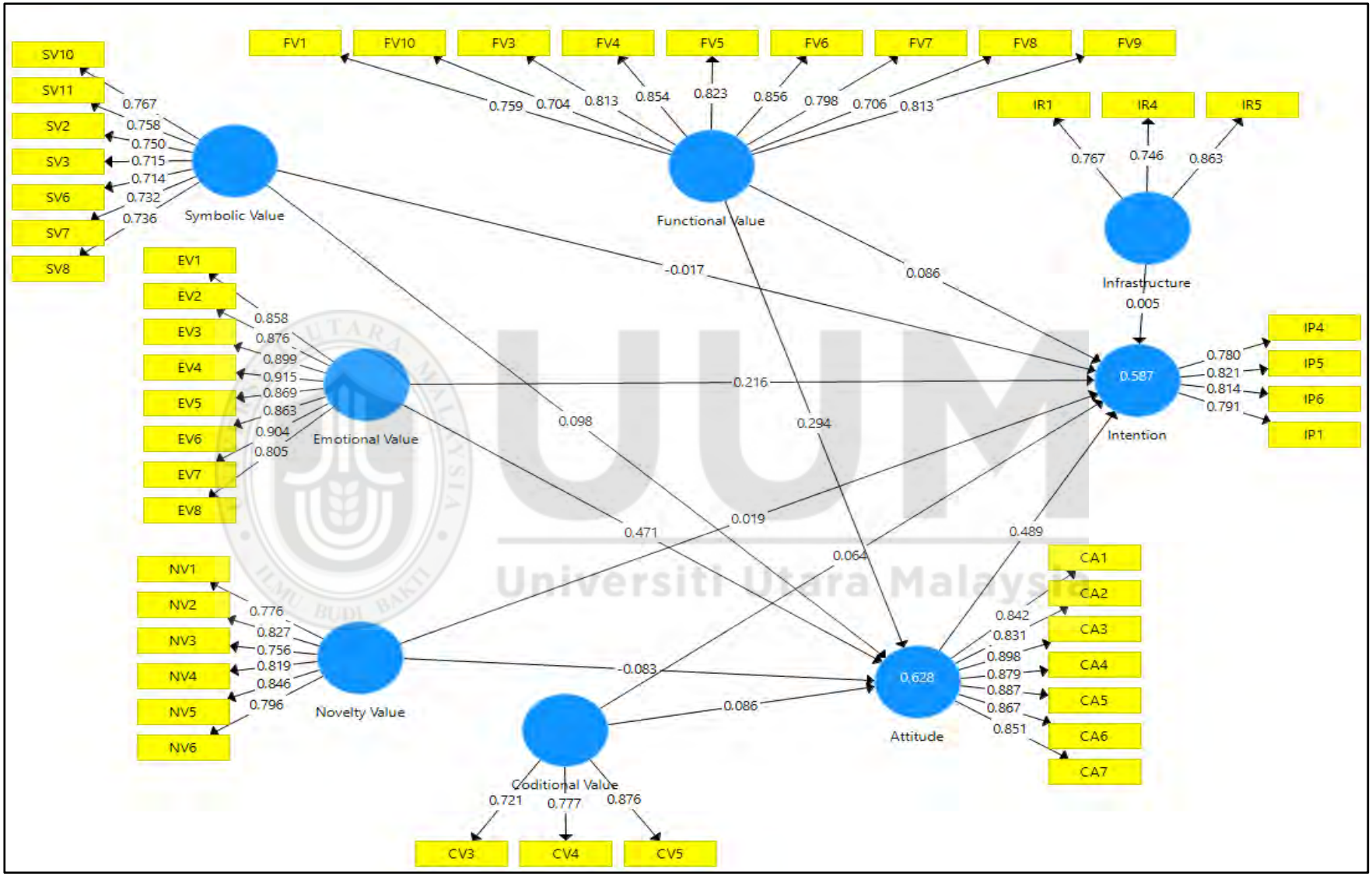

Figure 4.2

Items Loadings, Path Coefficient and R^2 Values

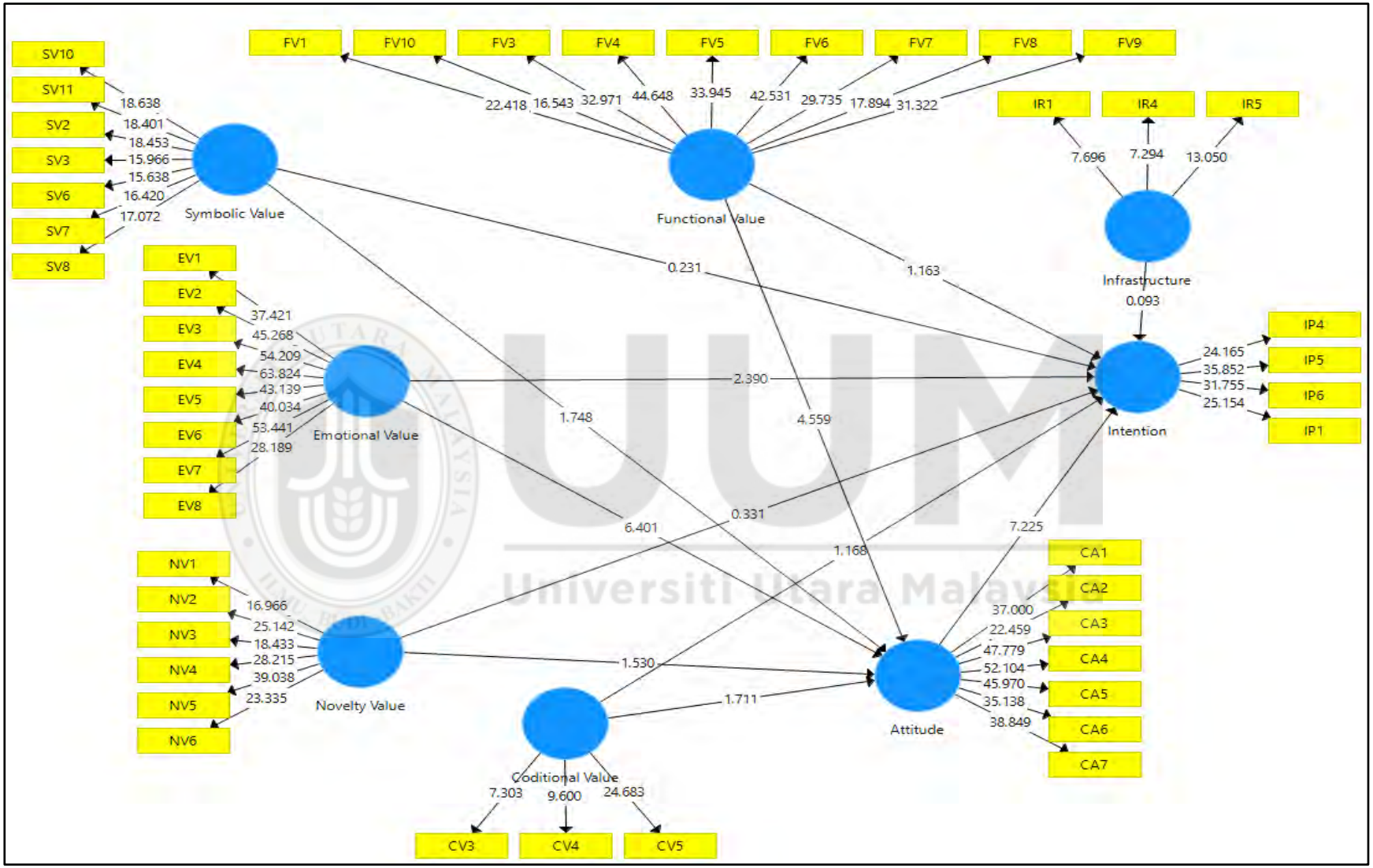

Figure 4.3

Path Model Significance Results (Bootstrapping)

Out of eleven (11) hypotheses tested, four (4) hypothesis are supported while seven (7) are not supported (as shown in Table 4.11). Results show that the consumers' attitudes towards electric car has positive and significant impact on the intention to purchase electric car (β= 0.489, t=7.225, p<0.01). Therefore, H_{16} on the effect of consumers' attitudes towards the electric car on intention to purchase electric car is supported. On the other hand, consumption values have results on the intention to purchase electric car. Emotional value (β= 0.216, t=2.390, p<0.05) have a positively significant effect on intention to purchase electric car; thus H_3 are supported. In addition, functional value (β= 0.086, t=1.163, p>0.01); symbolic value (β= -0.017, t=0.231, p>0.01); novelty value (β= 0.019, t=0.331, p>0.01); and conditional value (β= 0.064, t=1.168, p>0.01) have no effect on the intention to purchase electric car. Therefore, H_1, H_2, H_4 and H_5 are rejected or not supported.

Functional value (β= 0.294, t=4.559, p<0.01); emotional value (β= 0.471, t=6.401, p<0.01) have a positive significant relationship with consumers' attitude toward electric car. However, symbolic value (β= 0.098, t=1.748, p>0.01); novelty value (β= -0.083, t=1.530, p>0.01); conditional value (β= 0.086, t=1.711, p>0.01) have no effect on consumers' attitude towards electric car. Therefore, H_7, H_9 and H_{10} do not support to consumers' attitude towards electric car.

Table 4.11
Path Coefficients and Hypotheses Testing

Hypothesis	Relationship	Path Coefficients	Std. Error	t-value	P Values	Decision
H_1	Functional Value -> Intention to purchase electric car	0.086	0.074	1.163	0.245	Rejected
H_2	Symbolic Value -> Intention to purchase electric car	-0.017	0.073	0.231	0.817	Rejected
H_3	Emotional Value -> Intention to purchase electric car	0.216	0.090	2.390**	**0.017**	**Supported**
H_4	Novelty Value -> Intention to purchase electric car	0.019	0.056	0.331	0.741	Rejected
H_5	Conditional Value -> Intention to purchase electric car	0.064	0.054	1.168	0.243	Rejected
H_6	Functional Value -> Consumer attitude toward electric car	0.294	0.065	4.559*	**0.000**	**Supported**
H_7	Symbolic Value -> Consumer attitude toward electric	0.098	0.056	1.748	0.081	Rejected
H_8	Emotional Value -> Consumer attitude toward electric car	0.471	0.074	6.401*	**0.000**	**Supported**
H_9	Novelty Value -> Consumer attitude toward electric car	-0.083	0.054	1.530	0.126	Rejected
H_{10}	Conditional Value -> Consumer attitude toward electric car	0.086	0.050	1.711	0.087	Rejected
H_{16}	Consumers' attitude towards electric car -> Intention to purchase electric car	0.489	0.068	7.225*	**0.000**	**Supported**

Note: *p<.01, **p<.05

4.10.3 Coefficient of Determination

Coefficient of determination or R^2 value is the most common measure used to evaluate the structural model. R^2 value is a measure of the model's predictive accuracy and shows the amount of the variance explained in the endogenous variable by all exogenous variables which are linked to the endogenous variable (Hair et al., 2014). The R^2 value ranges from 0 to 1. When the value is equal or above 0.75 is considered substantial and 0.5 or 0.25, is described as moderate or weak (Hair et al., 2014).

Based on the results of the path model in Figure 4.2, the R^2 of the endogenous variables, namely the intention to purchase electric car and consumers' attitude towards the electric car is 0.587 and 0.628 respectively. This means that the functional value and emotional value can account for 62.8 percent of the variance in the consumers' attitude towards the electric car which is moderate. On the other hand, the intention to purchase electric car is accounted for 58.7 percent of the variance by consumers' attitude towards electric car which is moderate as well. From the R^2, it is concluded that the consumption value explains consumers' attitude towards electric car which is more than the intention to purchase electric car. This is because attitude is formed before intention. Therefore, consumers' attitude plays a role in the Theory of Consumption Value.

4.10.4 Effect Size

Besides evaluating the coefficient of determination (R^2), a measure called effect size (f^2) was examined. Effect size (f^2) is changed in R^2 value when a particular exogenous construct is deleted from the model (Hair et al., 2014). This is to evaluate whether the deleted construct has a substantive impact on the endogenous construct (Hair et al., 2014).

According to Cohen (1988), the f^2 values of .10 represent small effect; while 0.30 represent medium effect; and 0.50 represent large effect. Table 4.12 shows consumers' attitude towards electric car (f^2=0.216) have medium effect on the intention to purchase electric car. The functional value (f^2=0.007); emotional value (f^2=0.031); and conditional value (f^2=0.006) have small effect; while infrastructure readiness (f^2=0.000); novelty value (f^2=0.000); and symbolic value (f^2=0.000) have no effect.

On the other hand, the results show that emotional value (f^2=0.193) has a medium effect on consumers' attitudes towards electric car. Functional value (f^2=0.103); conditional value (f^2=0.013); novelty value (f^2=0.012); and symbolic value (f^2=0.011) has small effect on consumers' attitude towards electric car as indicated in Table 4.12.

Table 4.12

The Effect Size of Latent Variables

Construct	R^2	Effect Size (f^2)	Effect Size rating
Intention to purchase electric car			
Consumers' attitude toward the electric car	0.587	0.216	Medium effect
Infrastructure readiness	0.587	0.000	No effect
Functional value	0.587	0.007	Small effect
Symbolic value	0.587	0.000	No effect
Emotional value	0.587	0.031	Small effect
Novelty value	0.587	0.000	No effect
Conditional value	0.587	0.006	Small effect
Consumers' attitude toward electric car			
Functional value	0.628	0.103	Small effect
Symbolic value	0.628	0.011	Small effect
Emotional value	0.628	0.193	Medium effect
Novelty value	0.628	0.012	Small effect
Conditional value	0.628	0.013	Small effect

4.10.5 Predictive Relevance of the Model

A measure of predictive capability is required for PLS for prediction purposes. In order to examine the predictive accuracy, Stone-Geisser's Q^2 value was examined (Hair et al., 2014). In Smart PLS 3.2.8 package, blindfolding procedure is a suggested approach to test predictive relevance. Blindfolding is a sample reuse technique whereby the data will be removed from the data set based on the pre-determined distance (D). This is for the endogenous construct indicators. It estimates the parameters with the remaining data points and the removal data is handled as missing value (Hair et al., 2014). As a result, a general cross-validating metrics Q^2 is produced. Q^2 value refers to the capability of the

path model in predicting the originally observed values (Hair et al., 2014). Q^2 value can be calculated in two different ways. The cross-validated redundancy is the data prediction of both structural model and measurement model. Therefore, fits the PLS-SEM perfectly. Cross-validated communality uses only construct scores estimated for the target endogenous construct to predict the removal data points. Hence, cross-validated redundancy as a measure of Q^2 is recommended and applied in this study.

According to Fornell and Cha (1994), a cross-validated redundancy value is greater than 0 indicates that there is predictive relevance; while a value less than 0 indicates the model lack relevance. As illustrated in Table 4.13, the cross-validated redundancy for the intention to purchase electric car and consumers' attitudes towards the electric car is 0.347 and 0.436 respectively. The Q^2 value is more than 0. This indicates there is predictive relevance of the model. Hence, the model is predictable and consumers' attitudes have become one of the importance variables in the theory of consumption value rather than the intention to purchase electric car.

Table 4.13

Predictive Quality Indicators of the Model

Variable	**Cross-validated Communality**	**Cross-validated Redundancy**
Intention to purchase electric car	0.396	0.347
Consumers' attitude toward the electric car	0.631	0.436

4.11 Mediating Effect of Consumers' attitudes toward Electric Car

The benefit of using SEM for mediating analysis is that SEM can test the mediating variable as part of a comprehensive model (MacKinnon, 2008). Albers (2010) suggests that examination of mediating effects involves direct and indirect effects.

This study examined the mediating effect on consumers' attitudes towards electric car on the relationship between consumption values (i.e. functional value, symbolic value, emotional value, novelty value and conditional value) and the intention to purchase electric car. As such, Smart PLS 3.2.8 was employed to examine the interaction effect of consumers' attitude towards electric car. This is shown in Table 4.14.

To evaluate indirect effect, this study employed "bootstrapping the indirect effect" method as proposed by Preacher and Hayes (2008). According to Hair et al. (2014, p223);

> "*When testing mediating effects, researchers should rather follow Preacher and Hayes (2008) and bootstrap the sampling distribution of the indirect effect, which works for simple and multiple mediator models".*

According to Preacher and Hayes (2008), the path coefficient of "a" and "b" can be normally distributed but "a*b" will not necessarily be normally distributed (refer Figure 4.4.). Therefore, 'bootstrapping" procedure was employed to correct the situation. Derived from 5,000 bootstrap samples, results of the indirect effect are shown in Table 4.14.

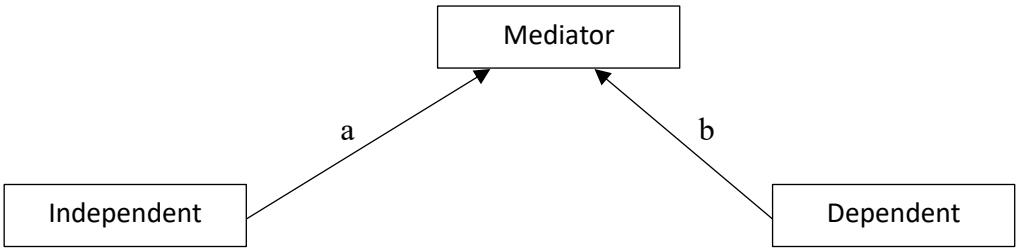

Figure 4.4
The Path Coefficient in Mediation
Source: Preacher and Hayes, 2008

According to Hair et al. (2014), mediating variables have major role in psychological and research. These variables clarify the relationship among them. However, many approaches have been utilized to asses' mediation in different researchers in the past two decades whereby a mediation analysis identifies the fundamental process underlying human behaviour and are important across behaviours and situations (Preacher & Hayes, 2004; 2008).

The bootstrapping results show that the consumers' attitude towards the electric car is a significant mediator for the relationships between functional value and the intention to purchase electric car (β= 0.144, t=3.724, p<0.01); and emotional value and the intention to purchase electric car (β= 0.230, t=4.913, p<0.01); while there is no mediation effect between novelty value and the intention to purchase electric car (β= -0.040, t=1.474, p>0.01); symbolic value and intention to purchase electric car (β= -0.048, t=1.726, p>0.01); and conditional value (β= -0.042, t=1.683, p>0.01).

Table 4.14
Mediating Effects of Consumers' attitude toward electric car

Hypothesis	Relationship	Path Coefficients	Std. Error	t-value	P Values	Decision
H_{11}	Functional Value -> Consumer Attitude -> Intention to Purchase	0.144	0.039	3.724*	**0.000**	Mediation effect
H_{12}	Symbolic Value -> Consumer Attitude -> Intention to Purchase	0.048	0.028	1.726	**0.084**	No mediation effect
H_{13}	Emotional Value -> Consumer Attitude -> Intention to Purchase	0.230	0.047	4.913*	**0.000**	Mediation effect
H_{14}	Novelty Value -> Consumer Attitude -> Intention to Purchase	-0.040	0.027	1.474	**0.141**	No mediation effect
H_{15}	Conditional Value -> Consumer Attitude -> Intention to Purchase	0.042	0.025	1.683	**0.092**	No mediation effect

Note: *p<0.1.

4.12 Moderating Effect of Infrastructure Readiness

A moderator variable can be assumed as the third variable that changes the relationship between the independent variables and dependent variable. It is usually called as contingent variable (Figure 4.5). According to Holmbeck (1997), a moderator variable is the one which influences the relationship between two variables. The nature of the impact of the predictor on the criterion varies according to the level or values of the moderator.

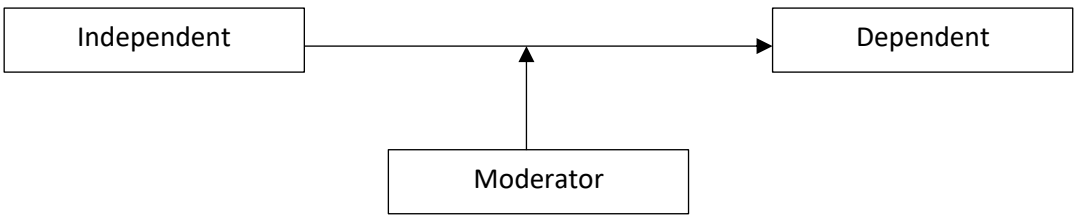

Figure 4.5
Moderated Relationship

In testing the moderation effect on infrastructure readiness, consumers' attitude towards the electric car became the independent variable, while the intention to purchase electric car remained as the dependent variable. R^2 changes and the effect size is important to

determine the effects on infrastructure readiness as moderator. The R^2 for the main effect model and interaction effect model are shown in Figure 4.6 and Figure 4.7. The R^2 for the main effect model is 0.587; while the R^2 for interaction effect model is 0.588. The R^2 change is 0.001. This indicates the addition of infrastructure readiness change by about 0.1 percent.

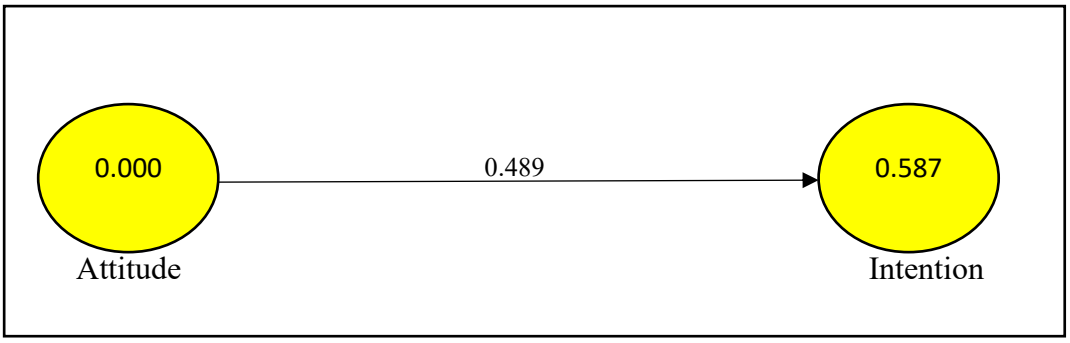

Figure 4.6
Main Effect Model

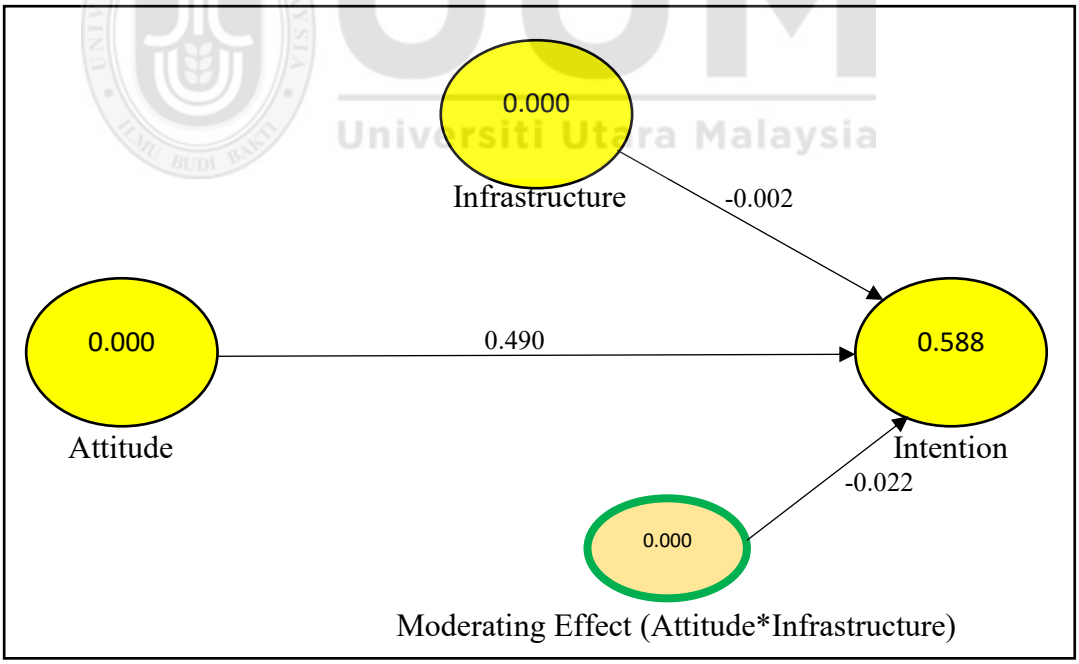

Figure 4.7
Interaction Effect Model

To test the interaction effect on infrastructure readiness, bootstrapping procedure was carried in Smart PLS 3.2.8 with bootstrapping sample of 500. The cut-off value for this test was 1.645 and 2.33 at significant level of 0.05 and 0.01 respectively. Table 4.15 illustrates the moderation effect on infrastructure readiness. Infrastructure readiness has no significant effect on the relationship between consumers' attitudes towards the electric car and the intention to purchase electric car (β= -0.022, t=0.578, p>0.1). Figure 4.8 shows the moderating effect of infrastructure readiness towards the intention to purchase electric car.

Table 4.15
Moderating Effect of Infrastructure Readiness

Hypothesis	Relationship	Path Coefficients	Std. Error	t-value	P Values	Decision
H_{17}	Moderating Effect (Attitude*Infrastructure Readiness) -> Intention to Purchase	-0.022	0.039	0.578	**0.564**	Not Supported

Note: p>0.1.

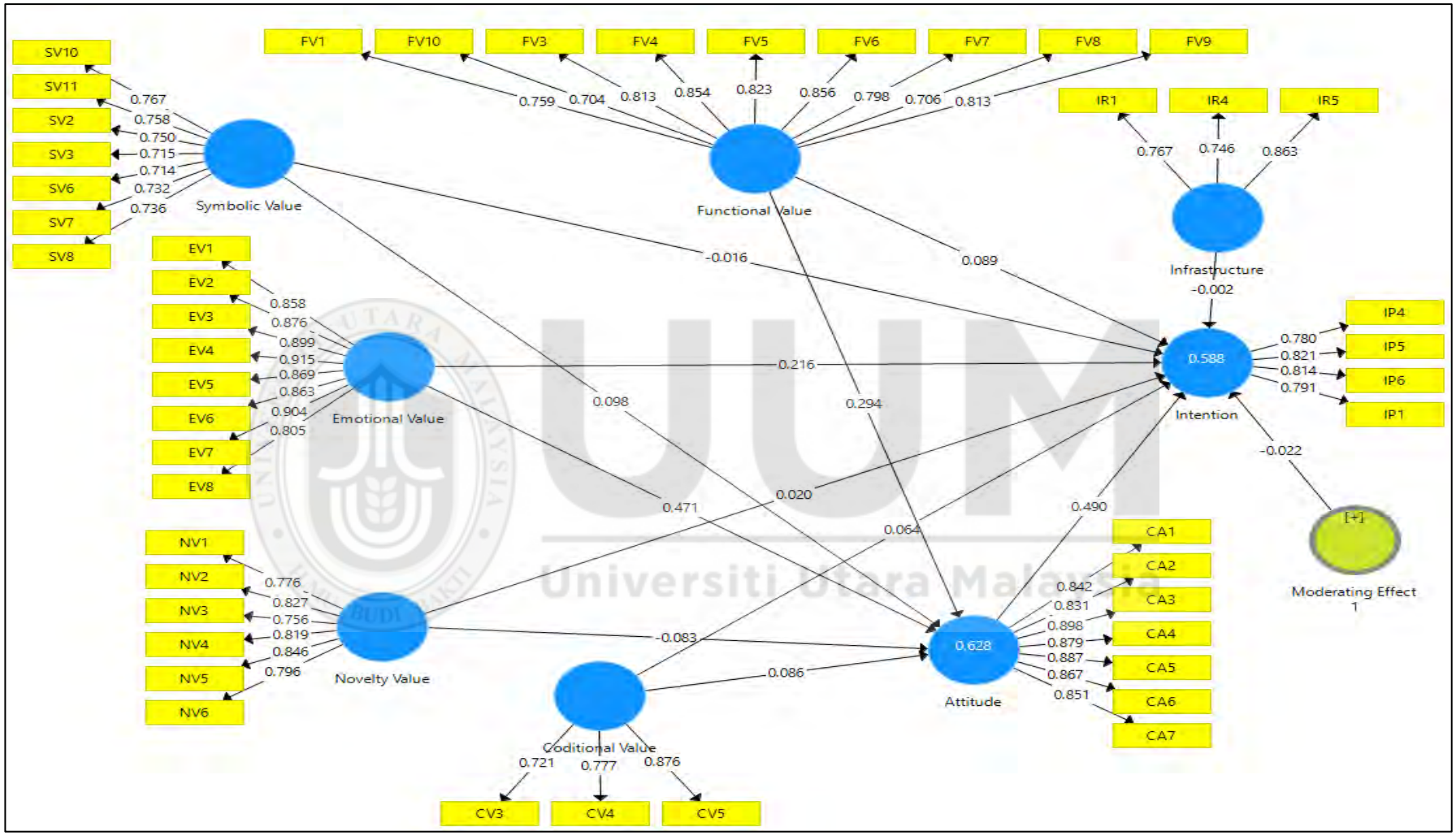

Figure 4.8

Moderating effect of Infrastructure Readiness

4.13 Summary of the Findings

Based on the data analysis the findings are shown in Table 4.16 below:-

Table 4.16
Summary of the Findings

Hypothesis	Relationship	Decision
H_1	Functional Value positively affect consumers' intention to purchase electric car	Rejected
H_2	Symbolic Value positively affect consumers' intention to purchase electric car	Rejected
H_3	Emotional Value positively affect consumers' intention to purchase electric car	**Supported**
H_4	Novelty Value positively affect consumers' intention to purchase electric car	Rejected
H_5	Conditional Value positively affect consumers' intention to purchase electric car	Rejected
H_6	Functional Value positively affect consumers' attitude toward electric car	**Supported**
H_7	Symbolic Value positively affect consumers' attitude toward electric	Rejected
H_8	Emotional Value positively affect consumers' attitude toward electric car	**Supported**
H_9	Novelty Value positively affect consumers' attitude toward electric car	Rejected
H_{10}	Conditional Value positively affect consumers' attitude toward electric car	Rejected

Table 4.16
Summary of the Findings (cont.)

Hypothesis	Relationship	Decision
H_{11}	Consumers' attitude toward the electric car positively mediates the relationship between functional value and intention to purchase electric car	**Supported**
H_{12}	Consumers' attitude toward the electric car positively mediates the relationship between symbolic value and intention to purchase electric car	Rejected
H_{13}	Consumers' attitude toward the electric car positively mediates the relationship between emotional value and intention to purchase electric car	**Supported**
H_{14}	Consumers' attitude toward the electric car positively mediates the relationship between novelty value and intention to purchase electric car	Rejected
H_{15}	Consumers' attitude toward the electric car positively mediates the relationship between conditional value and intention to purchase electric car	Rejected
H_{16}	Consumers' attitude towards electric car is positively associated with consumers' intention to purchase electric car in Malaysia	**Supported**
H_{17}	Infrastructure readiness moderates the relationship between consumers' attitude toward electric car and consumers' intention to purchase electric car.	Rejected

4.14 Chapter Summary

This study employs PLS-SEM as the major analysis technique. It is a very powerful analysis and has become the first choice to analyse complex models. Before testing the model of the study, SPSS was used for normality test. This is because there are two (2) variations of SEM analysis, namely CBSEM and VBSEM. In order to choose the variation to be used in this study, normality test was carried out. The data is not normally distributed and VBSEM has been chosen as it does not require normally distributed data.

This study used Smart PLS 3.2.8 as a tool to run the analysis. The analysis SEM is divided into two (2) stages. The first stage is the measurement model or outer model, where the validity and reliability of the items used for each construct are assessed. The next stage is the structural model where the hypothesis were tested and the relationship between the constructs assessed. According to Hair et al. (2014), there are five (5) steps to assess the structural model. First, the collinearity of the structural model was assessed followed by structural model path coefficients. Coefficient of determination (R^2) was the next step, followed by effect size (f^2) and the final step assessed the predictive relevance (Q^2) through blindfolding. After the two (2) stages, mediating effect and moderating effect were carried out. Mediating effect was tested by using the Preacher and Hayes' (2008) and Baron and Kenny's (1986) methods, while moderating effect was carried out through bootstrapping procedure.

As indicated in the various analysis above, four (4) out of eleven (11) hypotheses are accepted as being significant; while seven (7) hypotheses are rejected because of insignificant findings. Further, six (6) additional hypotheses were tested for mediating and moderating effects in which two (2) are supported while four (4) are not supported. The detailed discussions of the findings are in the next chapter.

CHAPTER 5

DISCUSSION AND CONCLUSION

5.1 Chapter Overview

This chapter begins with a summary of the study, followed by the discussion of findings. Next, both theoretical and practical contributions of the study are discussed in the following sections. The limitations of the study are explained and the suggestions for future research are discussed. Finally, the chapter provides a conclusion for the study.

5.2 Recapitulation of the study's findings

In response to the first research question on the influence of consumers' attitude towards electric car, the findings indicate that Malaysian consumers' attitudes towards the intention to purchase electric car is highly positive. As for the second research question on whether consumption values i.e. functional value, symbolic value, emotional value, novelty value and conditional value influence intention to purchase electric car, findings show that one (1) have significant relationship i.e. emotional value with intention to purchase electric car. These variables include consumers' attitude towards electric car and the emotional value. The intention to purchase electric car is explained by the two (2) mentioned variables and account for 58.7 percent of R^2.

Based on the third research question that is whether functional value, symbolic value, emotional value, novelty value and conditional value influence consumers' attitude toward electric car, the findings indicate that functional value and emotional value are

significant in influencing consumers' attitude towards the electric car, accounting for 62.8 percent of R^2 by two (2) variables.

As for the fourth research question, on the analysis of mediation indicates that consumers' attitude towards electric car mediates the relationship between: (a) functional value and intention to purchase electric car; (b) emotional value and intention to purchase electric car. Conversely, consumers' attitude towards electric car does not mediate the relationship between: (a) conditional value and intention to purchase electric car; (b) novelty value and intention to purchase electric car and (c) symbolic value and the intention to purchase electric car.

Finally, for the fifth research question on whether infrastructure readiness moderates the relationship between consumers' attitude towards the electric car and the intention to purchase electric car, the findings from Smart PLS indicate that infrastructure readiness has no moderating effect on the relationship between consumers' attitudes towards the electric car and the intention to purchase electric car. Thus, this study rejects the hypothesis on moderating effect on infrastructure readiness.

5.3 Discussion

To discuss the empirical findings, the following sub-sections are organized to answer the five (5) research questions set earlier in line with seventeen (17) hypotheses to achieve the research objectives.

5.3.1 The effect of Determinants on Intention to Purchase Electric Car and Consumers' attitude toward Electric Car

The first (1), second (2) and third (3) research questions are based on determining intention to purchase electric car and consumers' attitude towards electric car. The results show that two (2) out of six (6) factors are significantly related to the intention to purchase electric car. The factors found to be significantly related to the intention to purchase electric car, are consumers' attitude towards electric car and the emotional value. It shows that consumers' attitude towards electric car and emotional value constitute a large percentage of explanation on the difference in the intention to purchase electric car, indicating that the intention to purchase electric car can be predicted by two (2) variables with a large explanatory power, explaining 58.7 percent of the difference. Out of the two (2) variables, consumers' attitude towards electric car has the highest contribution followed by emotional value.

The comparison between demographic variables and the intention to purchase electric car is not included as a research question and objective. However, the analysis can be meaningful for marketers to market the electric car to the right target market segments. Therefore, it is found that among demographic variables, only occupation group has significant differences towards the intention to purchase the electric car specifically, retired or pensioner and government servant followed by the private sector. They are the potential future buyers of the electric car.

The researcher found that most of the respondents intend to purchase electric because they feel that it plays a crucial role in helping the environment. In other words, environmental issue is the main reason respondents purchase the electric car. This can

be supported by most of the respondents' claim that they intend to purchase electric car because electric car is environmentally-friendly and they feel more comfortable driving electric car than a conventional car.

There are two (2) factors significantly related to consumers' attitude towards the electric car; functional value and emotional value. It shows that functional value and emotional value constitute a large percentage of explanation on the differences in consumers' attitude towards electric car. This indicates that consumers' attitude towards the electric car can be predicted by the two (2) variables with a large explanatory power, explaining 62.8 percent of the difference. Emotional value is found to be the highest contributor, followed by functional value. Each variables is explained in the following sections.

5.3.1.1 Consumers' attitude toward Electric Car

It has been established that a significant relationship exists between consumers' attitude towards electric car and the intention to purchase electric car. It means that the more a customer develops favourable feelings towards electric car, the intention to purchase electric car is higher or stronger. Therefore, consumers' attitude, which is delivered in terms of attitude to the electric car and attitude to the environment always contributes to consumers' intention to purchase electric car. This is consistent with a recent studies in Malaysia by Adnan et al. (2018); Nor Azila and Teoh (2016); Wen et al. (2015); and Ahmad et al. (2014). This shows that consumers' attitude has a positive impact on consumers' intention to purchase electric car. The findings reveal that the positive attitude towards the electric car and the environment, influence their purchase decision.

Based on the findings of this study, some reliable reasons were identified in obtaining a significant relationship between consumers' attitude towards electric car and the intention to purchase electric car. A favourable attitude can greatly influence the purchase intention, if consumers possess a favourable attitude about the electric car. The probability of the consumers' intention to purchase electric car is higher. Furthermore, the specific attitude such as attitude towards green products like electric car seems important to consumers due to the environmental concerned. As such, in environmental consumer research, it represents feelings towards the purchase decision of environmentally products such as electric car and the ecological consequences of such behaviour (Adnan et al. 2018). This shows that consumers are aware of and concerned with environmental issues. They believe that electric car can change the environment and provide a better future for the next generation. In the same vein the more benefit an electric car provides for the consumers the more likely they will purchase it. This is in line with the finding of Adnan et al., (2018), where a pro-environmental attitude was found to have a significant relationship on use of the electric car.

5.3.1.2 Functional value

Functional value does not have a significant relationship with the intention to purchase electric car; while there is a significant relationship with the consumers' attitude towards the electric car. This indicates that functional value does not lead to consumers' intention to purchase electric car. This might be due to the price and quality of the electric car which is not expected by the consumers. However, functional value is associated with consumers' attitude towards electric car. It means that consumer will form a favourable attitude to the electric car when they are satisfied with the functional value provided by the electric car. This indicates that positive attitude is formed when consumers agree

with the functional value of the electric car. This is in line with a previous study by Nor Azila and Teoh (2016) that consumption values such as functional value significantly relate to consumers' attitude. This means that the demand for electric car tend to be higher. However, due to the high price, most of the producers selectively import their electric car to Malaysia. On the other hand, quality was found to be in line with the finding of Vazifehdoust et al. (2013) that by having higher quality will lead the consumer buying the product.

Additionally, respondents' possess positive attitude towards electric car. At the same time attitude is also an act as a mediator in mediating the relationship between values and behaviours. Apart from the price and quality, maintenance cost is added as a new dimension for functional value. This means that different products have different functional value that represent the product. Therefore, to promote the electric car in Malaysian market, the producers or manufacturers should focus on the functional attributes of the electric car in terms of price, quality and maintenance cost. On the hand, producers and the government can consider for collaborations to carry out promotion or subsidize for future electric car buyer. The government should come out with more policies that could support the electric car market such as tax exemption.

5.3.1.3 Symbolic value

The finding of this study shows that symbolic value has no significant relationship with the intention to purchase electric car as well as consumers' attitude towards the electric car. This means that the consumers maintain their purchase intention and attitude without the influence of symbolic value. Therefore, the intention to purchase electric car and consumers' attitude towards the electric car are not influenced. Besides, there is no

valid reasons for customers to change their purchase intention and attitude based on symbolic value.

In this study, the symbolic value is made up of three dimensions, namely social value, social influence and self-identity. Previous studies focus on either one or two of the dimensions mentioned. The findings of this study is in line with some previous findings, such as Nor Azila and Teoh (2016); Teoh and Nor Azila (2015); Chan (2013); Hong et al. (2013); Lin et al. (2010); Lin and Huang (2012) who found that either social value or social influence or self-identity is not significant with purchase intention. Meanwhile, the findings of this study is not consistent with some previous studies on the aspect that either social value or social influence or self-identity is significant with the purchase intention (Maharum et al., 2017; Solaiman et al., 2017; Suki, 2016; Alesia et al., 2014; Wang et al., 2013). There are also studies that emphasize on social influence. These studies state that social influence is significant with the purchase intention while no significant relationship exists between self-identity and purchase intention (Nabsiah et al., 2011). Tan's (2013) findings contradicts with Nabsiah et al. (2011) findings in which social influence has no significant relationship with purchase intention, while self-identity is significant with the purchase intention.

A possible reason could be that symbolic value does not have a significant relationship with the intention to purchase electric car. Perhaps, respondents do not feel that buying electric car could increase their social approval, status or make a good impression. This is because many consumers believe that the government and businesses should take the responsibility for environmental preservation (Laroche et al., 2001). This might be due to the reliability of social networks, such as Facebook, Twitter or Instagram, being

doubtable. Besides, in this 21st century, consumers are able to access large amounts of information via internet. Therefore, consumers can make their own decisions precisely rather than listen or follow social groups, such as friends and family.

Apart from that, the findings of this study also convey that consumers make decisions based on their personal beliefs rather than social influence or symbolic value. In today's society, there is s slight shift from collectivist to an individualist society in Malaysia. This is proven by Fauziah Noordin (2009) whereby in her study she mentioned that as the country becomes individualistic, personal beliefs become consumers' main concern. Therefore, symbolic value becomes less important in predicting consumers' purchase intention.

5.3.1.4 Emotional value

Emotional value has a significant relationship with the intention to purchase electric car, while there is a significant relationship with consumers' attitude towards electric car. This indicates that emotional value do lead to consumers' intention to purchase electric car and also emotional value which is associated with consumers' attitude towards the electric car. Therefore, the intention to purchase electric car is influenced by emotional value and consumers' attitude towards the electric car. The findings of the study is in line with previous studies such as Maharum et al., (2017); Teoh and Nor Azila (2015); Wang et al., (2013) and Lin and Huang (2012). These scholars emphasize that emotional value has a significant influence on the purchase intention and also on consumers' attitude.

Besides, the findings of this study reveal that consumers' who intend to purchase electric car is directly affected by emotional value with positive attitude towards the electric car. Emotional value is the utility derived from the feelings or affective states that a product generates (Sweeney & Soutar, 2001). In other words, it refers to the benefit obtained from the use of the product. For example, the electric car evokes feelings and emotions and the value is, the consumers' reaction to the product (Xiao & Kim, 2009). Also, green purchase behaviour is compatible with conservation of the natural environment. Thus, it usually generates positive feelings.

Furthermore, people regard buying electric car as an act that helps to preserve the environment. In turn, it generates positive experience and feelings of doing well for the environment and themselves. The government and marketers could generate positive attitude by generating slogans that could form consumers' positive attitude towards electric cars. Therefore, emotional value can form a favourable attitude towards electric cars among consumers.

5.3.1.5 Novelty value

Similar to symbolic value, novelty value is found to be insignificantly related to the intention to purchase electric car as well as consumers' attitude towards the electric car. This shows that novelty value does not change consumers' intention to purchase electric car as well as consumers' attitude towards the electric car. The findings of this study reveals that there is no significant relationship between novelty value and the intention to purchase electric car. This is in line with most of the previous studies, such as Solaiman et al., (2017); Nor Azila and Teoh (2016); Teoh and Nor Azila (2015) that state that novelty value is not important to the customers in making decisions in the

environment friendly and energy efficient product such as the electric car. Therefore, the findings of this study also reveal that customers do not have much curiosity in trying a new product rather they focus more on the functional benefits of the product.

However, comparing with others studies the findings on insignificant relationship between novelty value and consumers' attitude towards the electric car is not in line with the previous studies, such as Alesia et al., (2014); Lin et al. (2010); Lin and Huang (2012); Wang et al. (2013); and William and Soutar (2009). Further, the findings of insignificant relationship between novelty value and consumers' attitude towards the electric car is consistent with Alesia et al. (2014).

The possible reason of non-significant relationship might be because consumers are aware of the electric car in the market and have the knowledge about electric car. Therefore, knowledge does not seem to influence consumers to purchase electric car. The probability that consumers purchase electric car whether with or without knowledge is equal. As mentioned earlier, consumers nowadays are able to access a variety of information via the internet. Website information on business should be up-to-date so that consumers would be able to browse through these websites to know about the product before entering a showroom. Those who enter the showroom are the ones who seek advice to know more about an electric car to make their best choice in purchasing it.

5.3.1.6 Conditional value

For conditional value, it is found to be insignificantly related to the intention to purchase an electric car as well as consumers' attitude towards the electric car. This means that conditional value does not change consumers' intention to purchase electric car as well as consumers' attitude towards the electric car. This indicates that whatever promotion by manufacturers or tax exemption by the government, consumers would not have the intention to purchase an electric car and not in favour of the electric car. It means that manufactures and government need to put more effort especially on the awareness of the benefit in having an electric car in the market so that it could change the consumers' attitude towards the electric car. This findings is not consistent with most of the previous studies, such as Nor Azila and Teoh (2016); Teoh and Nor Azila (2015); Solaiman et al. (2017) and Maharum et al. (2017); Alesia et al. (2014) and Lin and Huang (2012). The studies state that conditional value has significant results towards the intention to purchase and consumers' attitude.

Based on the findings of this study, the researcher found that manufactures need to put more effort in aspects such as promotions and discount to the consumers, to have the intention to purchase an electric car. As for the government, it is crucial to make available of the subsidies (tax exemption) to enable the manufactures to provide acceptable prices of the electric car in the Malaysian market. In other words, the government and business sectors should work together in promoting the electric car to create opportunities and boost the electric car conditional value. This is important because conditional value and consumers' attitude should have positive relationships with consumers' purchase intention.

5.3.2 Mediating Effect of Consumers' attitude towards Electric Car

Based on the fourth research question that focuses on the mediating effect of the consumers' attitude toward the electric car and the association between functional value, symbolic value, emotional value, novelty value, conditional value and intention to purchase electric car, the study's finding reveal that there is a mediating effect of consumers' attitude towards the electric car on the relationship between functional value and emotional value and the intention to purchase electric car. As stated earlier, attitude has been widely used as a mediator between the predictors and purchase intention. However, there are limited studies on a mediating effect between consumption values and purchase intention. Nor Azila and Teoh (2016); Alesia et al. (2014) tested the relationship between consumption values and consumers' attitude and purchase intention.

Functional value and emotional value are found to have mediation effect in consumers' attitude towards the electric car with the intention to purchase electric car. This indicates that functional value and emotional value have a direct relationship with the intention to purchase electric car as well as indirect relationship through consumers' attitude towards electric car. The electric car's functional value attributes could lead to consumers' intention through favourable attitude. This means that the electric car functional attributes could form a favourable and lead to consumers' intention to purchase an electric car. In this study, the findings shows that the consumers still consider the factors of the green product's such as an electric car performance including product quality, product price and product stability before they decided to purchase an electric car. The consumers' would go for electric car if they expect the product to function well and is affordable in terms of price. This suggested reason was supported by Nor Azila and Teoh

(2016), who stated that consumers are more likely to seek for product benefits and product function, at a minimum cost to purchase their intention electric car.

The same goes to emotional value because ironically, consumers feel happier and morally right when they use green products such as electric car as they think using green products, the electric car could help in reducing harmful effects to themselves and towards the nature. Furthermore, one of the reasons is that consumers' intent to purchase electric car is because of environmental issues. They believe that by purchasing an electric car they could provide a better environment for future generation. In other words, without examining the mediating effect on consumers' attitude, emotional value does not significantly influence the intention to purchase electric car. When an electric car arouses consumers' positive feeling, this will lead to favourable attitude towards the electric car. Thus, form the consumers' intention to purchase the electric car. In terms of emotional value, marketers must be able to create a favourable attitude before consumers would form a purchase intention.

5.3.3 Moderating effect of Infrastructure Readiness

The fifth research question is related to how infrastructure readiness moderates the relationship between consumers' attitude towards an electric car and the intention to purchase the electric car. The result of this study indicates insignificant effect of infrastructure readiness on the relationship between consumers' attitude towards the electric car and the intention to purchase an electric car.

Based on the findings, the main reason for the insignificant relationship of the infrastructure readiness might be due to the availability of the current technology of the

electric car. This enables consumers to charge their car at home or at the workplace as long as an electricity plug for charging is available. The electric car is mainly for city and short distance use. The charging of the car is not the main issue in Malaysia as the travel distance per single charge is still within the urban mobility range. The findings of this study state that most of the respondents foresee that a single charge will allow them to travel comfortably to work place for at least a few days before the next charging cycle. Majority of the respondents also prefer to charge in the evening after work until the next morning using the normal charging mode while the vehicle is not in use. This is in line with the previous study, such as Sang and Bekhet (2015) that state the availability of the public charging infrastructure is not the main concern and therefore was not significant at this moment of time.

However, researcher believe that the need for public charging infrastructure will only be imminent when the market penetration of the electric car has matured and when electric car is used for medium and long-range commuting. Currently, infrastructure readiness does not influence the relationship between consumers' attitude and purchase intention. Nevertheless, the researcher propose to investigate the effect of this determinant in the future. It is hoped that it would not be ruled out in totality in prediction of electric car adoption.

5.4 Contributions of the study

Basically, the findings of the study have given rise to theoretical significance and methodological contributions while providing several managerial implications. These contributions and implications are discussed further in the following sections.

5.4.1 Key findings

This study has motivated the researcher in a rigorous behavioural framework on the basis of the Theory of Consumption Value (TCV) literature by signifying the presence of a reasoning prejudice to possibly increase the overall TCV predictability. Thus, producing deeper knowledge about the internal and external motivations of environmental concerns amongst Malaysian consumers towards the purchase intention of electric car. The outcomes in this research are based on the factors influencing the important of electric car originated to upkeep the preceding past works. Though not all of the previous researches have led with similar investigation settings, the empirical investigation has revealed that the mentioned predictors are also appropriate in the domain of the electric car.

The motivation of this empirical study is to determine the key predictors that influence the consumers towards the electric car in the context of Malaysia. This research contributes to the consumers' understanding regarding the electric car as a green technology in the transport sector by scrutinizing the new technology acceptance. Moreover, this study was carried out under a theoretical framework that was established based on the former findings from the discussed literatures. The analysis demonstrates that the environmental concerns, functional value, emotional value and consumers'

attitude are very important elements of electric car usage intentions. In terms of Malaysian government's initiative towards the use of electric cars, it is important to understand the predictors that influence the consumers' behaviour.

5.4.2 Theoretical Contributions

The theoretical contribution of this is based on; (i) identifying how consumption values and consumers' attitude towards electric car influence the intention to purchase electric car; (ii) examining the mediating effect on consumers' attitude between the predictors and purchase intention; and (iii) examining the moderating role of infrastructure readiness between consumers' attitude and purchase intention among individual consumers in Malaysia. Investigating the above relationship on individual Malaysian consumers' particularly electric car purchase behaviour in the Klang Valley, is the main contribution of this study to the existing literature on Malaysia's automotive market.

This study assists in examining the theory of consumption values regarding consumers' intention to purchase an electric car in the near future. A few studies have applied the theory of consumption values to examine purchase intention in the tourism and smartphones contexts. Based on the theory, researchers have examined why consumers choose to buy or not to buy a specific product; why consumers choose one product type over another; and why consumers choose one brand over another (Sheth et al., 1991). This study provide answers the research questions based on the theory that consumers choose the electric car because of its functional and emotional value; consumers choose the electric car over the regular car because of environmental issues.

In this study, the theory is based on consumers' perceived functional, symbolic, emotional, novelty and conditional value which form their attitude to the electric car and lead them directly and indirectly to purchase an electric car. It also uses infrastructure readiness as a moderator to moderate the relationship between consumers' attitude and purchase intention. Based on the theory, this study reveals a link in the relationships between certain consumption values and consumers' attitude towards the electric car and the intention to purchase the electric car. The findings of this study support the views that certain consumption values could create favorable attitude and increase the level of intention to purchase an electric car in the long-run.

Besides, this study also contributes by examining the consumers' attitude towards the electric car as the mediator between consumption values and the intention to purchase electric car. Consumers' attitude towards the electric car is the most significant predictor. It can be identified through positive or favorable feelings towards the electric car. This study finds that consumers' attitude towards the electric car does mediate the effect between functional value, emotional value and the intention to purchase the electric car. This finding extends to the theory of consumption values with additional variables, as a predictor as well as a mediator. This study has found that consumers' attitude as the important predictor. It plays a more significant role in the theory of consumption value whereby concumers' attitude form before the intention to purchase.

The findings show that consumption values explains more on consumers' attitude than the intention to purchase an electric car. Therefore, the finding on consumers' attitude extends the theory of consumption value as an additional variable and should

be included in the theory as a predictor as well as a mediator. Apart from theoretical contributions, this study also contributes to the methodological perspective by measuring the independent variables, mediator, moderator and dependent variable in the automotive industry, particularly the electric car. The measurements of these variables are shown to have good reliability and validity in the automotive industry. Therefore, this study contributes methodologically by validating the measurements of this study in a different context which has not been utilized previously.

5.4.3 Managerial Implications

Along with theoretical and methodological contributions, this study also has several managerial implications. The findings of the study have several useful managerial implications for automotive managers with respect to improving their effective marketing plans for the future. The managers can make use of the research findings to develop and implement plans which could create consumers' purchase intention.

Currently, various governmental efforts worldwide have initiated to reduce CO^2 emissions. There is increasing literature concentrating on CO^2 emissions which influence financial incentives on the sales of electric car. Nevertheless, Zhang et al., (2011) concluded that there is no indication of lawful agencies' encouragements as an influential factor in the electric vehicle purchase by a statistical investigation carried out in Nanjing, China. In contrast, Sierzchula et al., (2014) found financial incentives slightly positive as well as statistical influence. They carried out a multi-national research (statistical point of view) study of the elements influencing the rates of purchase intention towards electric car for thirty countries in the year 2012.

According to Graham-Rowe et al., (2012), incentives less than two thousand dollars had a very little influence towards the purchase intention of the electric car. The overall sales of electric car in Malaysia are projected to increase in the upcoming years primarily due to the increasing hybrid vehicles' popularity and awareness among consumers towards the electric car. Additionally, the increase of sales of electric cars is due to extended incentives of tax by the government of Malaysia and the latest model promoted by vehicle manufacturing companies (Yang et al., 2016).

The findings also show that the government's subsidy and manufacturers' promotions or discounts could create a positive attitude to the intention to purchase an electric car among Malaysian consumers. Therefore, the government should consider continuing the tax exemption policy or any policies which can boost the sales of electric cars in order to achieve the NAP's objectives. This would enable Malaysia to become the regional hub for energy efficient vehicles. Additionally, local brand manufacturers, Proton and Perodua, should produce their own electric cars as soon as possible to the market. This is because the electric car market is still at the penetration level whereby there is still a low level of electric cars which are in use in Malaysia. Therefore, there is an opportunity for local brand manufacturers to enter the market by offering better functional value and also create emotional values to the consumers which can help the local brand manufacturers to regain their market share.

Despite that, a pro-environmental attitude plays a vital impact towards the purchase intention of electric car in Malaysia (Adnan et al., 2016a). Moreover, electric car such as PHEV's types have noteworthy visions owing to their low emissions and extended mileage. Hence, manufacturer can utilise the fuel economy as well as eco-friendly

vehicles as one of the advertising tools in their marketing in order to inspire the local consumers towards the purchase intention of electric car (Ahmadi et al., 2015). In the product strategy context, more electric cars must be introduced by the manufacturers to attract the consumers. The electric car such as PHEVs must have the features like easy operation, fuel efficiency, and high quality in the context of reliability and durability.

Currently, the overall cost of electric car is about 30% higher than a conventional car in Malaysia (Adnan et al., 2018). For the purpose of avoiding excess-pricing, the car manufacturers must propose more reasonable electric car. Incentives from the government are also one of the factors that affect the electric car purchase intention in Malaysia. As per the outcome, the lawful agencies should ensure giving incentives for the buyers of electric cars. In addition, the local government can provide distinctive incentives, such as low corporate tax as well as low manufacturing plant tax for a 5–10 year duration to vehicle manufacturers in Malaysia.

The study indicates that consumers' attitude to environmental policy encourages them to take action towards the intention to purhase electric car. Given this result, the Malaysian government through Minister of Transportation (M.O.T) should established an appropriate environmental policy to promote electric car. For example, even the study indicate infrastructure readiness in term of charging station not supported, more public charging stations should be built in public car parks, and the Malaysian government should set a standard that new properties are "electric car ready" – electric car charging station should be included in every new property. In open-air car parks, solar-powerd charging systems should be implemented. Further,

consumers also consider the cost-saving advantages of electric car. Therefore, the manufacturers should emphasize functional value in term of the driving performnce and the energy-saving performanceof electric car.The marketers should draw a table to show the annual cost savings of electric car against normal conventional car, as to stimulate the consumers' purchase intention. As recommended, solar-powered charging facilities in both public and private car parks can provide cheaper renewable energy. This would enable public and private car parks provide a free charging service that would save further on the energy costs for electric car owners.

Electric cars can mitigate CO_2 and pollutant emissions, even when considering the indirect emissions from electricity generation and battery production. The CO_2 mitigation costs will likely continue to decrease in the future through technological learning and a growing share of renewables in the electricity mix. For that matter, the substantial decline in the price of electric cars in conjunction with a market trend towards larger and more powerful vehicles suggest high prices and costs may no longer be the primary factor inhibiting the electrification of road transport. If so, government thru Minister of Transport (M.O.T) and industry could reconsider subsidies and focus on non-cost market barriers such as: (i) drive range, recharging times, and availability of recharging infrastructure, (ii) warranty, maintenance, and take-back plans, (iii) branding, marketing, and product positioning that capitalizes on the status competition and social frames of consumers that can pursue to purchase intention of electric car in Malaysia..

5.5 Limitations and Future Research Directions

Seven factors have been investigated by the research framework of this study. They are functional value, symbolic value, emotional value, novelty value, conditional value, consumers' attitude and infrastructure readiness as predictors of intention to purchase electric car. In order to explore further on the findings of the study, more studies should be carried out within the automotive industry as well as to compare with other industries. Additionally, this study used the theory of consumption values as a basic theory and concentrated on electric car purchase intention. Therefore, future studies could examine different product categories by using the theory of consumption values instead of extending the TPB or TRA. This is because the theory of consumption values is able to explain 58.7 percent of behavioral intention in this study, while the TPB and TPA could only explain 40 percent of behavioral intention. Hence, it shows that the theory of consumption values could be better in predicting purchase intention than the TPB or the TRA.

The study has found that 58.7 percent of intention is explained by the seven predictors mentioned above, which indicates that there are some other factors that could probably influence consumers' purchase intention. In other words, there are 41.3 percent of differences that could be explained by other variables which are not included in this study. Therefore, future research can consider including other possible predictors to examine the consumers' purchase intention.

This study has shed some lights into how automotives marketers could formulate strategies to increase the sale of electric car among Malaysian consumers. Policy makers should formulate appropriate policy and intervention strategies to encourage

the growth of electric cars usage in Malaysia. This can be a strategy to increase energy efficiency, in the same time reduce CO^2 emissions and to lessen the reliance on fossil fuel within the transaportation sector. Public awareness should be imposed on the issue of climate change, energy efficiency and carbon emission. It will help to raise the consumer symbolic value and novelty value towards electric cars. This in turn will impact on the higher level of acceptance of green car, the electric car.

As this study is based on cross-sectional data where data was collected once in a specific time which is unable to provide a better insight and understanding of consumers' intention. This is because consumers' intention might change over time and there is a time interval for consumers to carry out an action. Hence, longitudinal research is recommended in future research to better understand consumers' purchase behavior and the significant variables that influence consumers' intention that might be different in long run.

Besides, the data of this study was collected from Klang Valley consumers' which is unable to represent the whole population of Malaysia especially between Peninsula Malaysia or East Coast and West Coast of Malaysia. Therefore, future research suggest that a cross-culture study is conducted to compare consumers' intention in buying electric cars between the West Coast and East Coast of Malaysia. This is because consumers in East Coast and West Coast having different living lifestyle, culture, economy and development level. Therefore, cross-culture study would enable marketers to apply appropriate marketing strategies to reach out to the customers in the concerned coasts.

Occupation group is the only demographic variable that shows significant differences in the intention to purchase electric cars. Therefore, occupation group can be treated as a moderating variable in future research on the relationship between consumpton values and purchase intention. This will be very useful for marketers to plan and target the product to reach a high consumers segment.

5.6 Conclusion

The findings of the study has provided a comprehensive idea of the literature concerning the factors influencing the purchase intention of electric cars. Grounded on the delivered literature, it was found that this study bridges the gap and forecasts the studies based on the electric cars. It also reveals the penetration rates of the consumer behaviour towards electric car purchase intention. In Malaysian transportation sector, the electric car has been considered as the best alternative in the reduction of carbon dioxide emissions. As such, a set of scenarios that suit most of the today's market conditions were assumed to develop the major modelling techniques used in the literature on electric cars.

Apart from that, the findings of the study indicate that the level of intention to purchase electric cars and consumers' attitude towards the electric car tend to be high. This means that consumers constructively intend to purchase an electric car. The findings of the study is considered as additional contribution to the knowledge of consumers' behavioral intention. It also suggests that the managers or marketers of automobile companies should create more value in order to be competitive and create consumers' favorable attitude and the intention to purchase an electric car.

This research has concluded that consumers' attitude towards purchase intention of electric car is positive when impacted by environmental concerns. In other words, if the consumers are concerned over the environment, they will have more attraction towards purchase intention of electric cars. Generally, with respect to the marketing angle, a vehicle seller, the manufacturers should show and launch more of electric cars. As such, this would enhance the popularity of the brand as well as the consumer's environmental concern. Also, emphasise the awareness of eco-friendly environmental benefits towards the purhase intention of electric cars.

The findings of the study also suggest that two factors: consumers' attitude towards electric car, and emotional value have significant influence on the intention to purchase electric car, while functional value, symbolic value, conditional value, and novelty value have insignificant relationship with the intention to purchase electric cars. The findings provide academicians with stronger basis to develop strategies that could lead to consumers' intention to purchase electric cars. Therefore, electric car producers should take efforts to improve consumers' emotional value towards elecric cars. This could lead to favorable attitude and intention to purchase electric cars.

On the mediating effect on consumers' attitude towards the electric car on the relationship between the predictors and the intention to purchase electric car, it is found that some predictors are effective. Thus, support consumers' attitude towards the electric car that mediates the relationship between: (a) functional value and intention to purchase a electric car; (b) emotional value and intention to purchase a electric car; while consumers' attitude towards electric car does not mediate the relationship between: (a) symbolic value and intention to purchase a electric car; and

(b) novelty value and intention to purchase electric car and (c) conditional value and intention to purchase electric car. When consumers perceive significant functional value, and emotional value, they will form a favorable attitude to the electric car and increase the level of intention to purchase electric car and vice versa.

In terms of moderating effect of infrastructure readiness, the relationship between consumers' attitude towards electric car and the intention to purchase electric car is not moderated by infrastructure readiness. This indicates that the availability of public charging station does not influence consumers' purchase intention towards electric car in Malaysia as the travel distance per single charge is still within the urban mobility range. When consumers form a favorable attitude towards electric car they might intend to purchase electric car although the infrastructure readiness is not significantly available in Malaysia.

Furthermore, the findings of the study stand a chance to develope further with the theoretical frameworks on emotions in psychology, consumer behaviour, and ethics. Additionally, there is a need for a proper policy being developed by the government in order to ensure the electric car being accepted in the market. It is important that the key purpose of government support for electric car is to lessen the country's dependence on fossil fuel imports and tapping into its plentiful nickel reserves, which is required to make the lithium-ion batteries for electric car use.Instructions and strategies can generate explicit intellectual and emotive replies in consumers. Hence, affect consumers' choices and behaviours. Consumers' behaviour and emotional reactions can assist marketing authorities and lawful agencies to collaborate in their communication, instruction, and strategies to overcome the obstacles towards the

purchase intention and adoption of electric car in Malaysia.

Simply put, another reasons to ensure the accaptance of the consumer to have purchase intention towards the electric car is that sufficient available electric car models in the market, affordable price cost of electric car purchase and ownership, govenment incentives and convenient charging infrastructure that could made elecetric car popular idea accros the nation.

Lastly, the findings of this study are in line with previous studies and the research objectives of this study. Other industries could also apply the model of this study to increase the understanding and existing literature. The implications of the findings in this study are discussed in order to provide information from the perspective of consumers' behavioral intention to academicians and stakeholders as well as any other industries.

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APPENDIX A

Dear Respondents,

I am currently pursuing my Doctorial of Business Administration with University Utara Malaysia, Kuala Lumpur campus. As part of my curriculum, I'm doing a research on the determinants of green purchase intention on electric vehicle.

The general purpose of this study is to understand consumers' intention in purchasing electric car in Malaysia. I have prepared the academic questionnaire and would like if you could spare some time completing them.

This is an anonymous study. Confidentially of data will be protected to the fullest extent possible and no identifying information about participants will appear in any written report or presentation related to this study.

Thank you for your co-operation for completing this survey.

Yours sincerely

MOHD NORSAM MOHD SARI
UNIVERSITY UTARA MALAYSIA
Tel No. 012-6898086
Email Address**: mohdnorsam@yahoo.com.my /**
mohdnorsam60@gmail.com

Part 1; Respondent Profiles

This section intends to get information the respondent's demographic background.
(Tick (√) the box which best describes you)

1. **Gender**

☐	Male	☐	Female

2. **Age**

☐	25 – 30 years old
☐	31 – 40 years old
☐	41 – 50 years old
☐	51 years old & above

3. **Highest Level of education attained.**

☐	Secondary Level	☐	Diploma
☐	Bachelor's Degree	☐	Master's Degree
☐	Doctorate	☐	Professionals Qualification

4. **Marital Status**

☐	Single
☐	Married
☐	Divorced/Widowed

5. **Occupation**

☐	Government Servant
☐	Private Sector
☐	Self-employed
☐	Retired or Pensioner
☐	Others_____

6. **Race**

☐	Malay
☐	Chinese
☐	Indian
☐	Others_____

7. **Monthly Income**

☐	RM5,000 – RM7,000
☐	RM7,001 – RM10,000
☐	RM10,001 – RM15,000
☐	RM15,001 – RM20,000
☐	Above RM20,001

8. **Which cities/districts do you stay**

	Kuala Lumpur
	Petaling Jaya
	Subang Jaya
	Shah Alam
	Klang
	Ampang

9. **What choice of electric car brand do you interested to buy.**
(You may choose more than one(1) answer)

	Nissan Leaf
	Tesla S
	BMW 330e
	BMW i3s EV
	Mercedes Benz C300e
	Mercedes Benz S560e
	Others Brand_____(Please specify)

Part 2: Intention to Purchase Electric Car

Instructions:

Please indicate the extent of your opinion with the statements describing the statements by "circling" the corresponding box using the following scales:-

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

IP1	I intent to purchase electric car because it is environmental-friendly.	**1**	**2**	**3**	**4**	**5**
IP2	I intent to purchase electric car even though it is more expensive than conventional car.	**1**	**2**	**3**	**4**	**5**
IP3	I intent to purchase electric car over conventional car when their product qualities are similar.	**1**	**2**	**3**	**4**	**5**
IP4	I feel that I will play a great part in helping the environment if I drive electric car.	**1**	**2**	**3**	**4**	**5**
IP5	I feel more comfortable if I drive electric car rather than conventional car.	**1**	**2**	**3**	**4**	**5**
IP6	I intent to buy electric car in near future.	**1**	**2**	**3**	**4**	**5**

Part 3: Attitude on Electric Car

Instructions:

Please indicate the extent of your opinion with the statements describing the statements by "circling" the corresponding box using the following scales:-

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

CA1	I like electric car because it is good.	**1**	**2**	**3**	**4**	**5**
CA2	I like electric car because it is desirable	**1**	**2**	**3**	**4**	**5**
CA3	I like electric car because it is pleasant.	**1**	**2**	**3**	**4**	**5**
CA4	I like electric car because it is wise.	**1**	**2**	**3**	**4**	**5**
CA5	I like electric car because it is favourable.	**1**	**2**	**3**	**4**	**5**
CA6	I like electric car because it is enjoyable.	**1**	**2**	**3**	**4**	**5**
CA7	I like electric car because it is reliable.	**1**	**2**	**3**	**4**	**5**
CA8	It is essential to promote electric car in Malaysia	**1**	**2**	**3**	**4**	**5**
CA9	Electric car reduces effect of climate change	**1**	**2**	**3**	**4**	**5**
CA10	Electric car preserves the environment.	**1**	**2**	**3**	**4**	**5**
CA11	Electric car reduces the pollutions level.	**1**	**2**	**3**	**4**	**5**

Part 4: Infrastructure Readiness for Electric Car

Instructions:

Please indicate the extent of your opinion with the statements describing the statements by "circling" the corresponding box using the following scales:-

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

IR1	I would not purchase electric car if there is no public charging.	**1**	**2**	**3**	**4**	**5**
IR2	I would always be worried about running out of charge when driving an electric car.	**1**	**2**	**3**	**4**	**5**

IR3	I prefer charge my car at home without the need to charge at public charging stations.	**1**	**2**	**3**	**4**	**5**
IR4	Public charging stations need to be as near as possible to my home or my workplace.	**1**	**2**	**3**	**4**	**5**
IR5	Public full recharging of an electric car should be done in the shortest time possible.	**1**	**2**	**3**	**4**	**5**

Part 5: Functional Value of Electric Car

Instructions:

Please indicate the extent of your opinion with the statements describing the statements by "circling" the corresponding box using the following scales:-

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

FV1	Electric car offers value for money.	**1**	**2**	**3**	**4**	**5**
FV2	Electric car is reasonable price.	**1**	**2**	**3**	**4**	**5**
FV3	Electric car is performed better.	**1**	**2**	**3**	**4**	**5**
FV4	Electric car is well made.	**1**	**2**	**3**	**4**	**5**
FV5	Electric car has an acceptable standard of quality.	**1**	**2**	**3**	**4**	**5**
FV6	Electric car is performing consistently.	**1**	**2**	**3**	**4**	**5**
FV7	Plug in Hybrid Electric car is better in fuel efficiency.	**1**	**2**	**3**	**4**	**5**
FV8	Electric car will lower down my maintenance cost.	**1**	**2**	**3**	**4**	**5**
FV9	Electric car is economical driving	**1**	**2**	**3**	**4**	**5**
FV10	Plug in Hybrid Electric car consume less petrol.	**1**	**2**	**3**	**4**	**5**

Part 6: Symbolic Value of Electric Car

Instructions:

Please indicate the extent of your opinion with the statements describing the statements by "circling" the corresponding box using the following scales:-

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

SV1	If I buy an electric car, most people who are important to me will disapprove it.	**1**	**2**	**3**	**4**	**5**
SV2	If I buy an electric car, most people who are important to me will appreciate it.	**1**	**2**	**3**	**4**	**5**
SV3	If I buy an electric car, most people who are important to me will find it desirable.	**1**	**2**	**3**	**4**	**5**
SV4	If I buy an electric car, most people who are important to me will not support it.	**1**	**2**	**3**	**4**	**5**
SV5	I learned so much about electric car from my friends and family.	**1**	**2**	**3**	**4**	**5**
SV6	Most members of my friends and family will expect me to buy electric car.	**1**	**2**	**3**	**4**	**5**
SV7	I will follow the advice of my friend that I should buy electric car.	**1**	**2**	**3**	**4**	**5**
SV8	My friends recommend me that I should buy electric car.	**1**	**2**	**3**	**4**	**5**
SV9	Buying electric car would have a negative effect on my self-image.	**1**	**2**	**3**	**4**	**5**
SV10	Buying electric car would say something positive about myself.	**1**	**2**	**3**	**4**	**5**
SV11	Buying electric car would say something positive about what I stand for.	**1**	**2**	**3**	**4**	**5**
SV12	I feel proud of being a green person.	**1**	**2**	**3**	**4**	**5**

Part 7: Emotional Value of Electric Car

Instructions:

Please indicate the extent of your opinion with the statements describing the statements by "circling" the corresponding box using the following scales:-

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

EV1	Buying electric car will give me feelings of well-being.	**1**	**2**	**3**	**4**	**5**
EV2	Buying electric car is exciting.	**1**	**2**	**3**	**4**	**5**
EV3	Buying electric car will make me satisfied.	**1**	**2**	**3**	**4**	**5**
EV4	Buying electric car will make me feel happy.	**1**	**2**	**3**	**4**	**5**
EV5	Buying electric car will give me feelings of making a good personal contribution to something better.	**1**	**2**	**3**	**4**	**5**
EV6	Buying electric car will give me feelings of doing the morally right thing.	**1**	**2**	**3**	**4**	**5**
EV7	Buying electric car will give me feelings of a better person.	**1**	**2**	**3**	**4**	**5**
EV8	I am emotionally support electric car.	**1**	**2**	**3**	**4**	**5**

Part 8: Novelty Value of Electric Car

Instructions:

Please indicate the extent of your opinion with the statements describing the statements by "circling" the corresponding box using the following scales:-

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

NV1	Before buying electric car, I will obtain substantial information about the different makes and models of products.	**1**	**2**	**3**	**4**	**5**
NV2	I will acquire a great deal of information about the different makes and models before buying electric car.	**1**	**2**	**3**	**4**	**5**

NV3	I am willing to seek out novel information about electric car.	**1**	**2**	**3**	**4**	**5**
NV4	I like to search for new and different about electric car.	**1**	**2**	**3**	**4**	**5**
NV5	I appreciate that electric cars could reduce the pollution level.	**1**	**2**	**3**	**4**	**5**
NV6	I know that electric car could reduce environmental harm.	**1**	**2**	**3**	**4**	**5**

Part 9: Conditional Value of Electric Car

Instructions:

Please indicate the extent of your opinion with the statements describing the statements by "circling" the corresponding box using the following scales:-

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

CV1	I will buy electric car under worsening environmental condition.	**1**	**2**	**3**	**4**	**5**
CV2	I will buy electric car when there is a subsidy by government for electric car.	**1**	**2**	**3**	**4**	**5**
CV3	I will buy electric car when there is a discount rates for electric car.	**1**	**2**	**3**	**4**	**5**
CV4	I will buy electric car when there is a promotional activity for electric car.	**1**	**2**	**3**	**4**	**5**
CV5	I will buy electric car when electric car is available.	**1**	**2**	**3**	**4**	**5**

APPENDIX B

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Analysis 1\Data Analysis 264.sav'.
DATASET NAME DataSet2 WINDOW=FRONT.
DATASET ACTIVATE DataSet1.
DATASET CLOSE DataSet2.
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DATASET CLOSE DataSet3.
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  /CELLRANGE=full
  /READNAMES=on
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DATASET ACTIVATE DataSet4.
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```

```
  /COMPRESSED.
DATASET ACTIVATE DataSet4.

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SAVE OUTFILE='C:\Users\MOHD NORSAM\Desktop\New Proposal (EEV)\Data Analysis
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COMPUTE IP=MEAN(IP1,IP2,IP3,IP4,IP5,IP6).
EXECUTE.
COMPUTE CA=MEAN(CA1,CA2,CA3,CA4,CA5,CA6,CA7,CA8,CA9,CA10,CA11).
EXECUTE.
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EXECUTE.
COMPUTE CV=MEAN(CV1,CV2,CV3,CV4,CV5).
EXECUTE.
DATASET ACTIVATE DataSet4.

SAVE OUTFILE='C:\Users\MOHD NORSAM\Desktop\New Proposal (EEV)\Data Analysis
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\Data Analysis 1\Data '+
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```

Descriptives

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ta Analysis 1\Data Analysis 264a.sav
```

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Intention To Purchase	264	1.33	5.00	3.7304	.69066
Consumers' Attitude	264	1.55	5.00	3.8285	.68262
Infrastructure Readiness	264	2.00	5.00	4.1598	.60043
Functional Value	264	1.00	5.00	3.5989	.70858
Symbolic Value	264	1.00	5.00	3.1506	.58279
Emotional Value	264	1.00	5.00	3.7434	.77674
Novelty Value	264	2.67	5.00	4.2336	.61245
Conditional Value	264	1.40	5.00	3.9136	.65267
Valid N (listwise)	264				

```
DATASET ACTIVATE DataSet4.
DATASET CLOSE DataSet1.
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  /COMPARE GROUPS
  /STATISTICS DESCRIPTIVES
  /CINTERVAL 95
  /MISSING LISTWISE
  /NOTOTAL.
```


Explore

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Intention To Purchase	264	100.0%	0	0.0%	264	100.0%
Consumers' Attitude	264	100.0%	0	0.0%	264	100.0%
Infrastructure Readiness	264	100.0%	0	0.0%	264	100.0%
Functional Value	264	100.0%	0	0.0%	264	100.0%
Symbolic Value	264	100.0%	0	0.0%	264	100.0%
Emotional Value	264	100.0%	0	0.0%	264	100.0%
Novelty Value	264	100.0%	0	0.0%	264	100.0%
Conditional Value	264	100.0%	0	0.0%	264	100.0%

Descriptives

			Statistic	Std. Error
Intention To Purchase	Mean		3.7304	.04251
	95% Confidence Interval for Mean	Lower Bound	3.6467	
		Upper Bound	3.8141	
	5% Trimmed Mean		3.7507	
	Median		3.7500	
	Variance		.477	
	Std. Deviation		.69066	
	Minimum		1.33	
	Maximum		5.00	
	Range		3.67	
	Interquartile Range		.83	
	Skewness		-.389	.150
	Kurtosis		.356	.299
Consumers' Attitude	Mean		3.8285	.04201
	95% Confidence Interval for Mean	Lower Bound	3.7458	
		Upper Bound	3.9112	
	5% Trimmed Mean		3.8514	
	Median		3.9091	
	Variance		.466	
	Std. Deviation		.68262	
	Minimum		1.55	
	Maximum		5.00	
	Range		3.45	
	Interquartile Range		.91	
	Skewness		-.394	.150
	Kurtosis		.391	.299
Infrastructure Readiness	Mean		4.1598	.03695
	95% Confidence Interval for Mean	Lower Bound	4.0871	
		Upper Bound	4.2326	
	5% Trimmed Mean		4.1860	
	Median		4.2000	
	Variance		.361	
	Std. Deviation		.60043	
	Minimum		2.00	
	Maximum		5.00	
	Range		3.00	
	Interquartile Range		.80	
	Skewness		-.425	.150
	Kurtosis		-.127	.299
Functional Value	Mean		3.5989	.04361
	95% Confidence Interval for Mean	Lower Bound	3.5130	
		Upper Bound	3.6847	
	5% Trimmed Mean		3.6111	

Descriptives

			Statistic	Std. Error
	Median		3.6000	
	Variance		.502	
	Std. Deviation		.70858	
	Minimum		1.00	
	Maximum		5.00	
	Range		4.00	
	Interquartile Range		.90	
	Skewness		-.163	.150
	Kurtosis		.893	.299
Symbolic Value	Mean		3.1506	.03587
	95% Confidence Interval for Mean	Lower Bound	3.0799	
		Upper Bound	3.2212	
	5% Trimmed Mean		3.1403	
	Median		3.0833	
	Variance		.340	
	Std. Deviation		.58279	
	Minimum		1.00	
	Maximum		5.00	
	Range		4.00	
	Interquartile Range		.58	
	Skewness		.336	.150
	Kurtosis		1.542	.299
Emotional Value	Mean		3.7434	.04781
	95% Confidence Interval for Mean	Lower Bound	3.6492	
		Upper Bound	3.8375	
	5% Trimmed Mean		3.7695	
	Median		3.7500	
	Variance		.603	
	Std. Deviation		.77674	
	Minimum		1.00	
	Maximum		5.00	
	Range		4.00	
	Interquartile Range		1.09	
	Skewness		-.250	.150
	Kurtosis		.183	.299
Novelty Value	Mean		4.2336	.03769
	95% Confidence Interval for Mean	Lower Bound	4.1594	
		Upper Bound	4.3078	
	5% Trimmed Mean		4.2630	
	Median		4.2500	
	Variance		.375	
	Std. Deviation		.61245	
	Minimum		2.67	

Descriptives

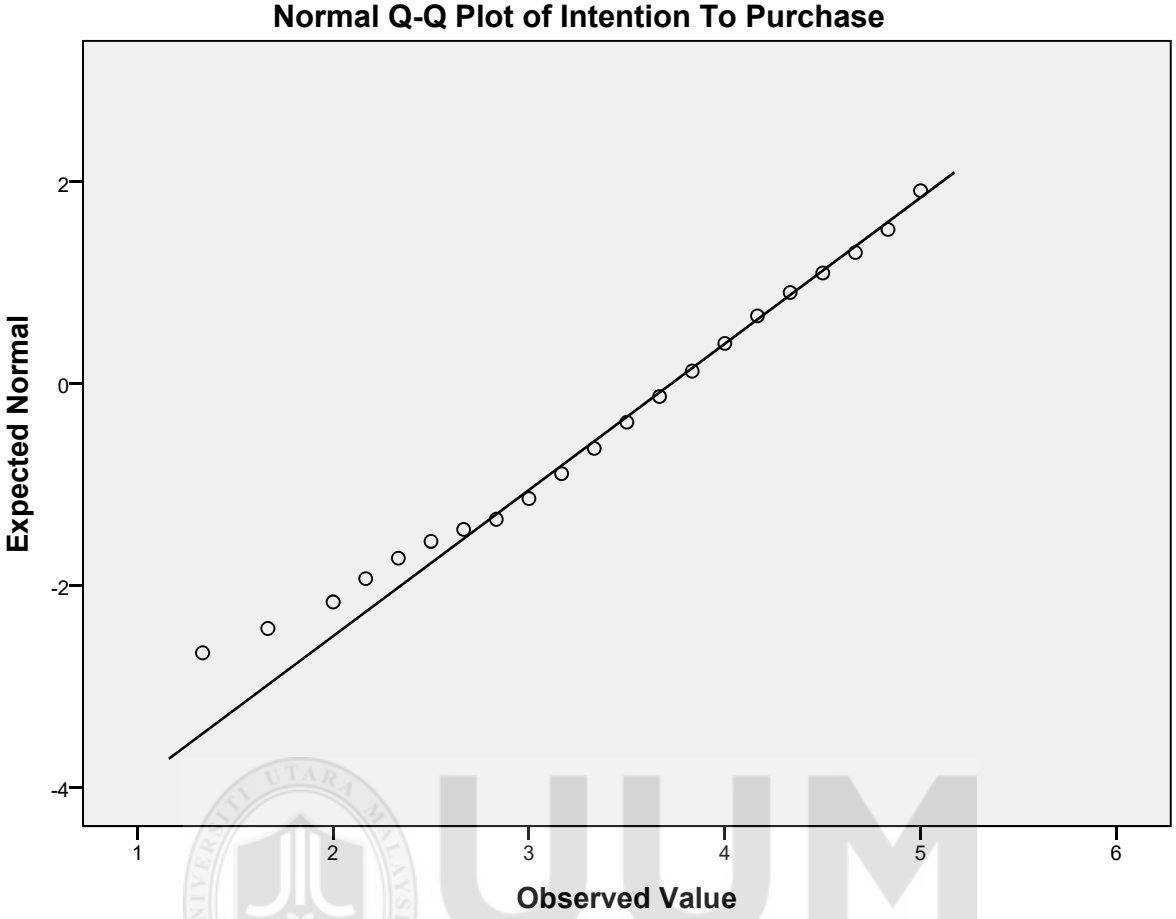
			Statistic	Std. Error
	Maximum		5.00	
	Range		2.33	
	Interquartile Range		1.00	
	Skewness		-.395	.150
	Kurtosis		-.598	.299
Conditional Value	Mean		3.9136	.04017
	95% Confidence Interval for Mean	Lower Bound	3.8345	
		Upper Bound	3.9927	
	5% Trimmed Mean		3.9242	
	Median		4.0000	
	Variance		.426	
	Std. Deviation		.65267	
	Minimum		1.40	
	Maximum		5.00	
	Range		3.60	
	Interquartile Range		1.00	
	Skewness		-.307	.150
	Kurtosis		.100	.299

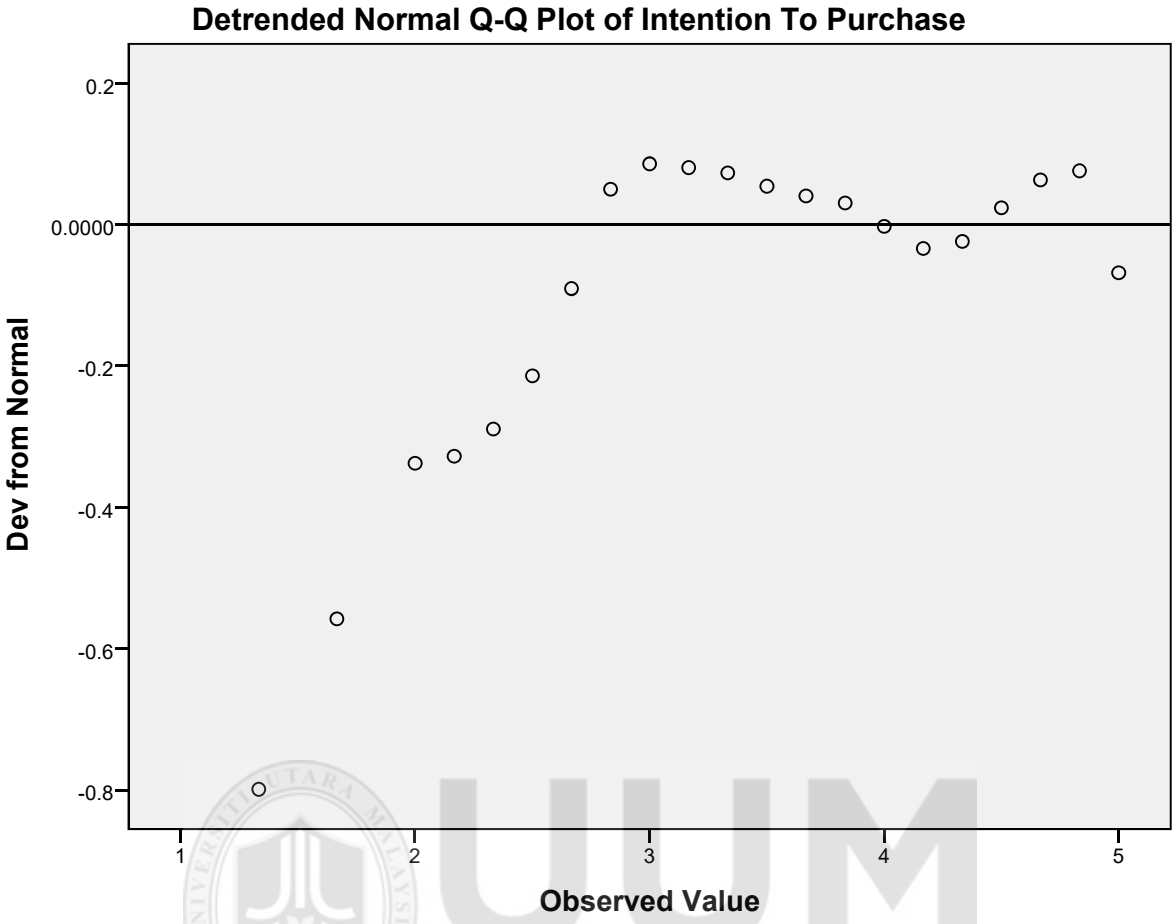
Tests of Normality

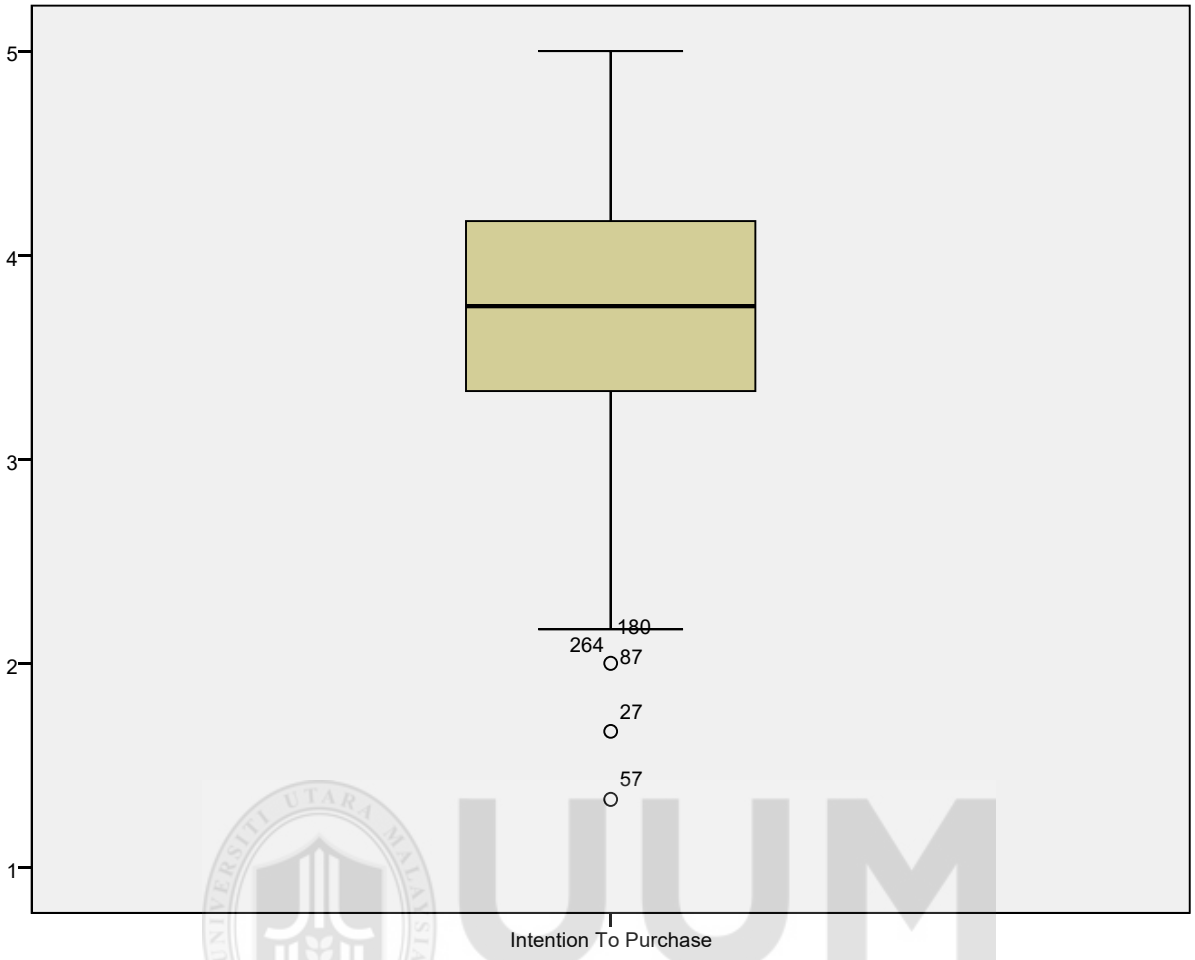
	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Intention To Purchase	.071	264	.003	.977	264	.000
Consumers' Attitude	.073	264	.002	.973	264	.000
Infrastructure Readiness	.100	264	.000	.948	264	.000
Functional Value	.085	264	.000	.967	264	.000
Symbolic Value	.089	264	.000	.971	264	.000
Emotional Value	.090	264	.000	.959	264	.000
Novelty Value	.130	264	.000	.919	264	.000
Conditional Value	.091	264	.000	.965	264	.000

a. Lilliefors Significance Correction

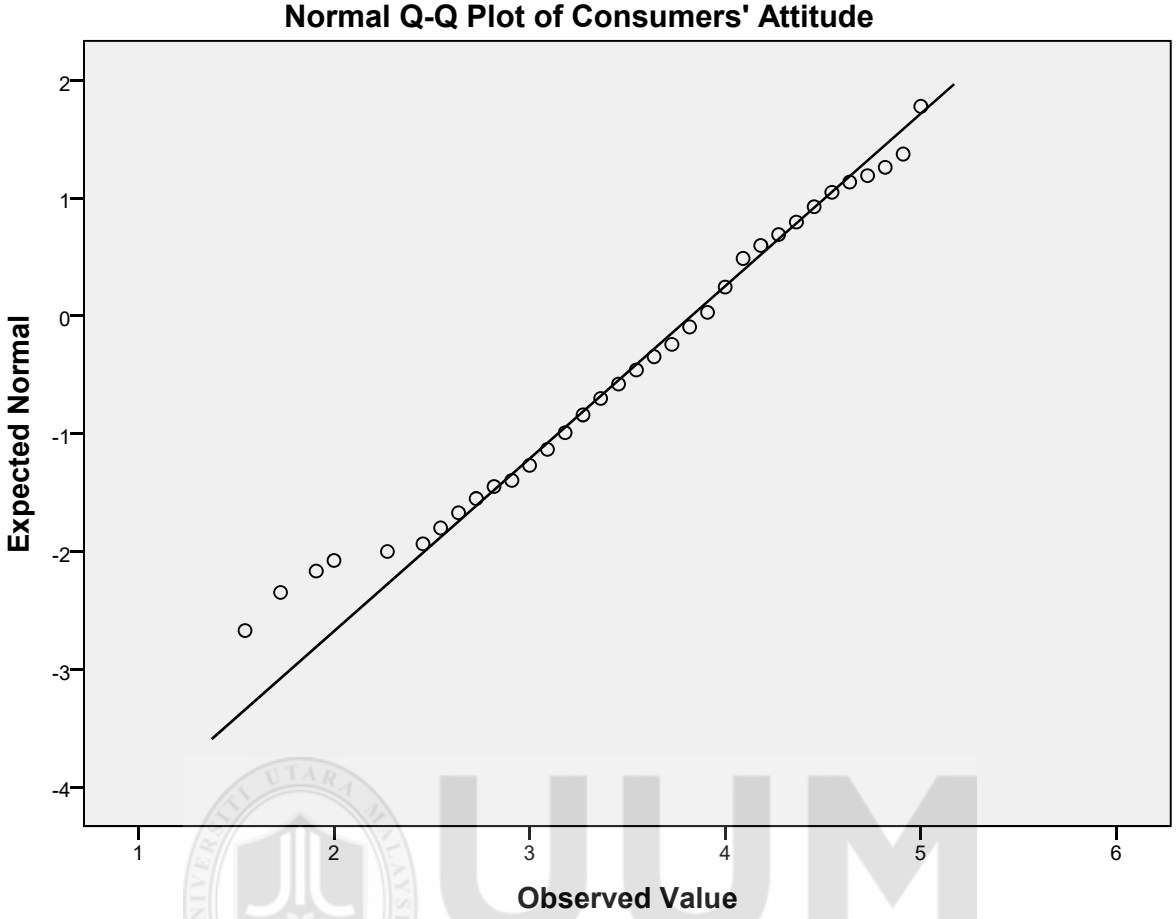
Intention To Purchase

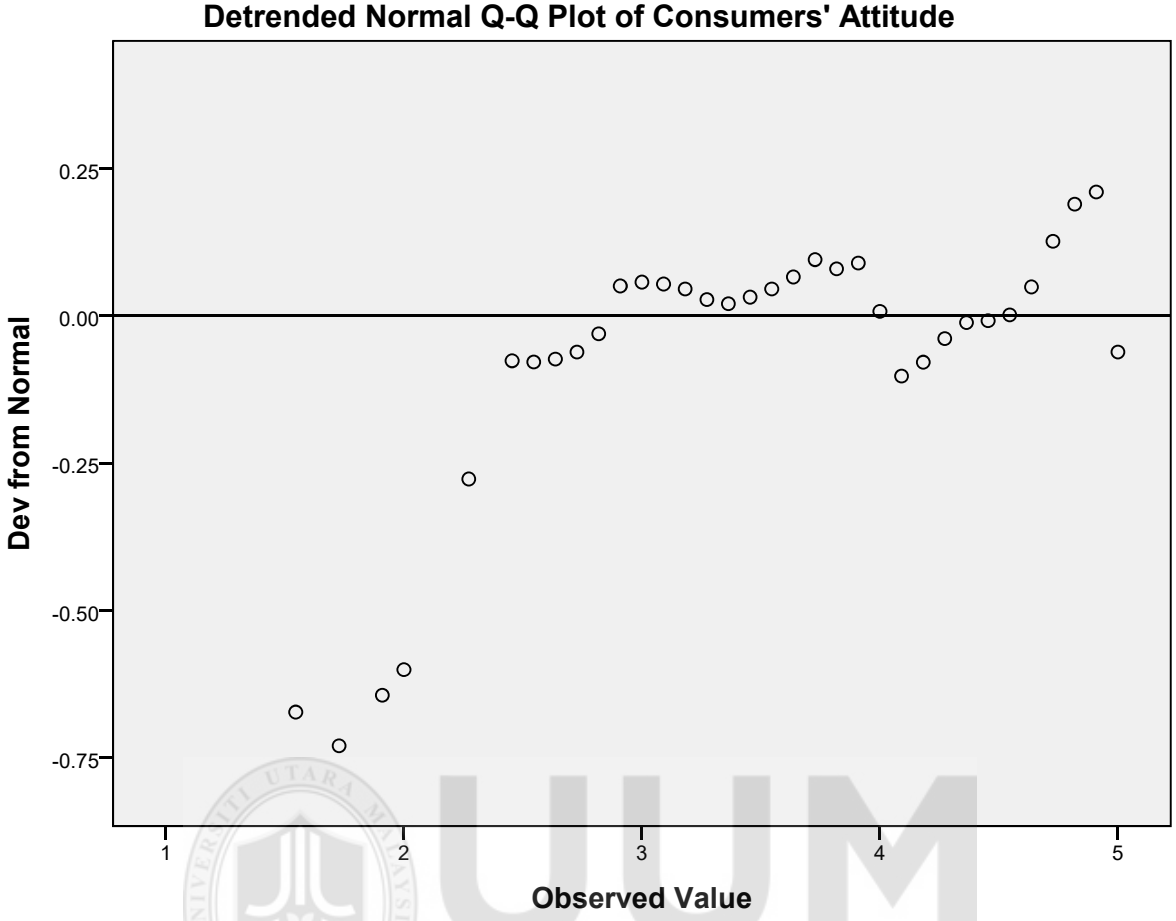


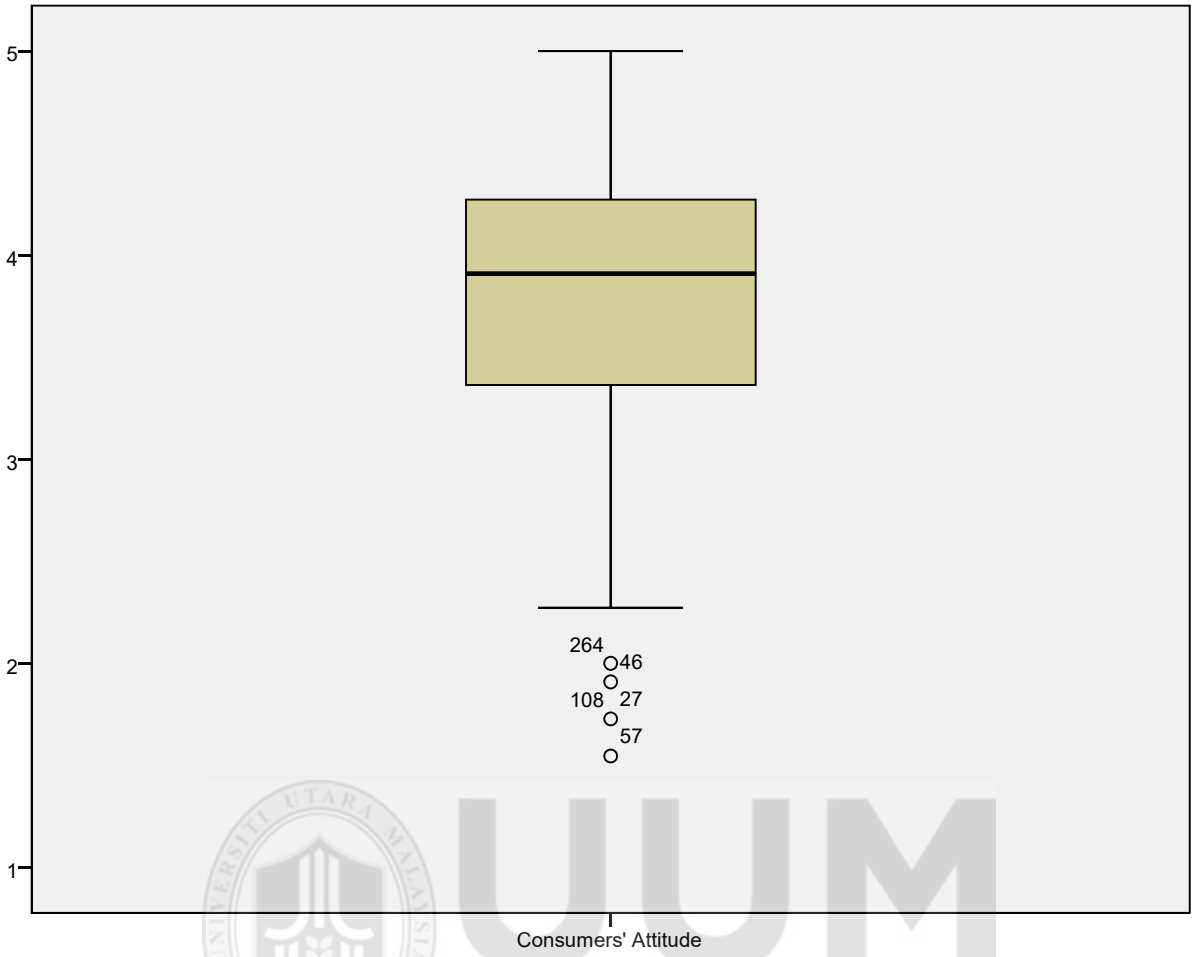




Consumers' Attitude







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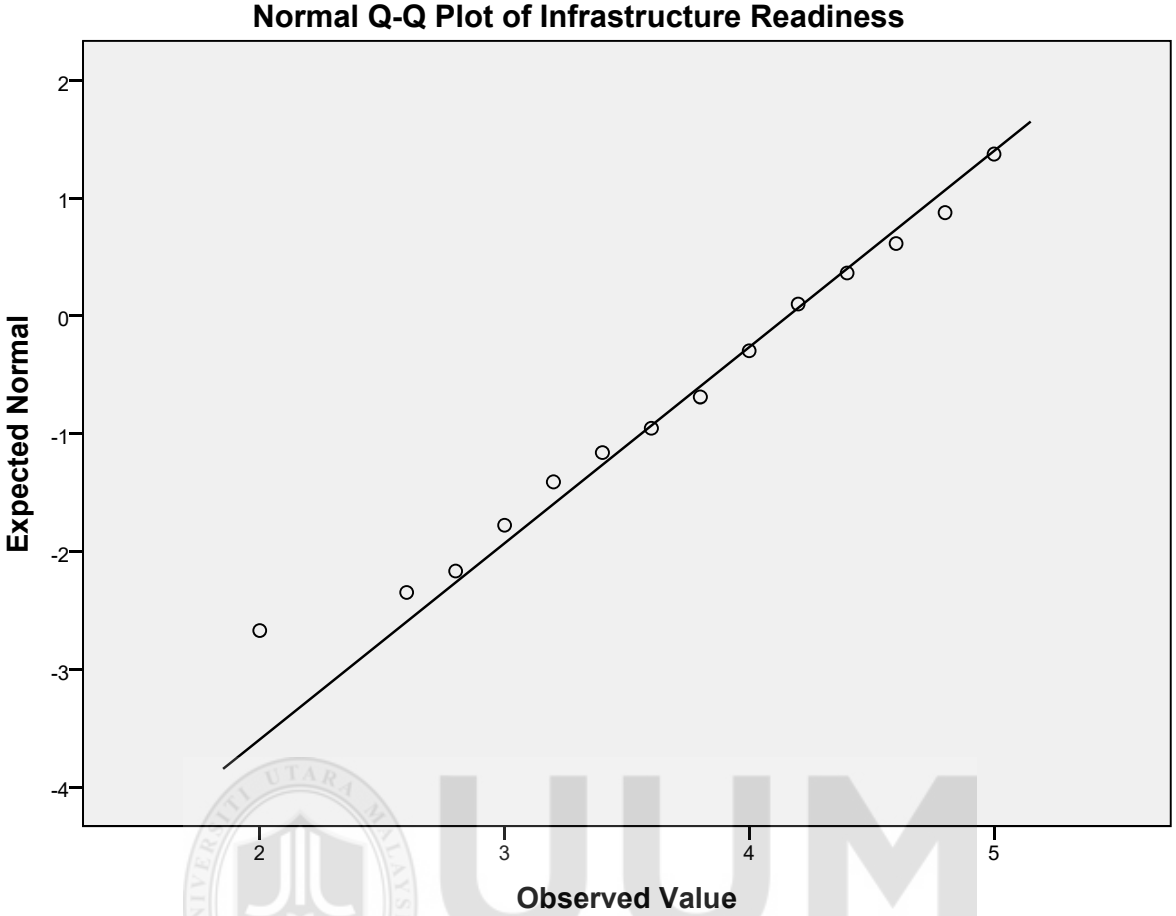
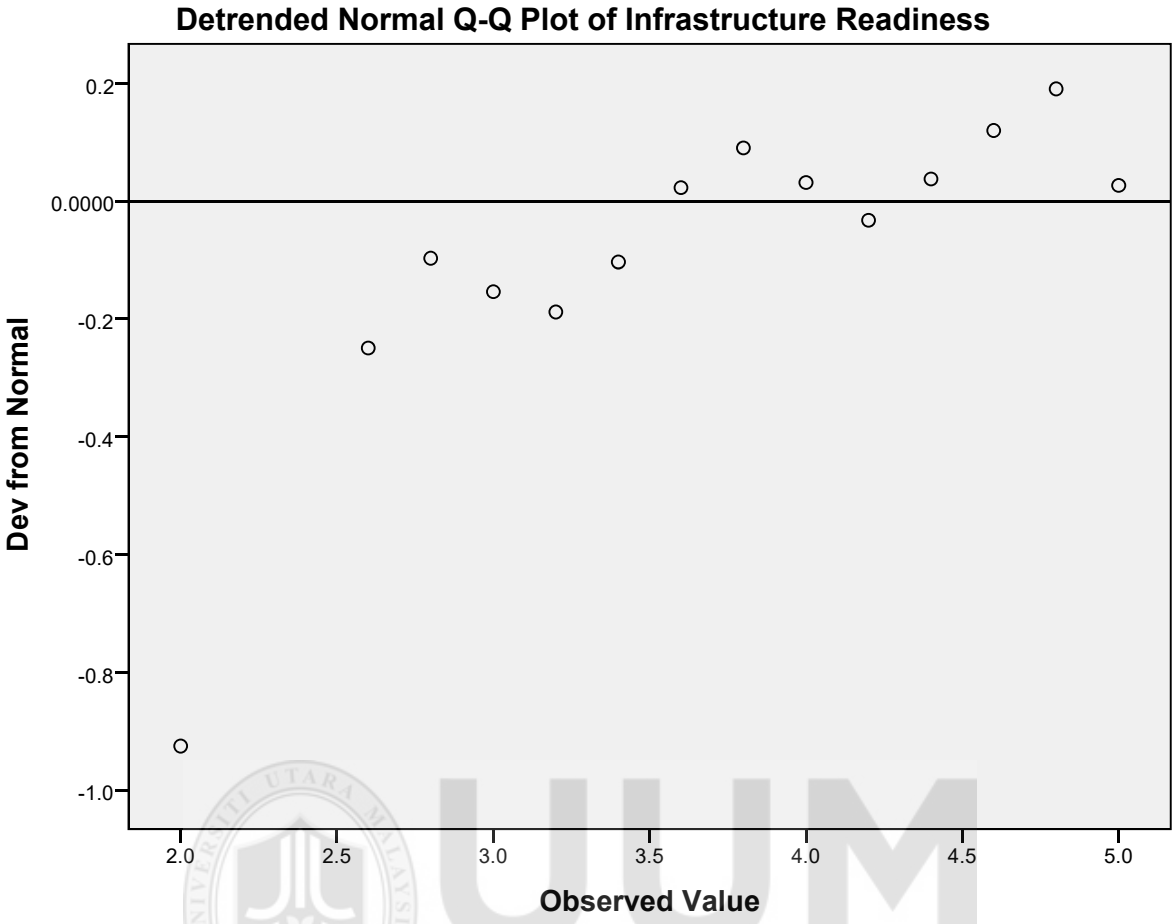
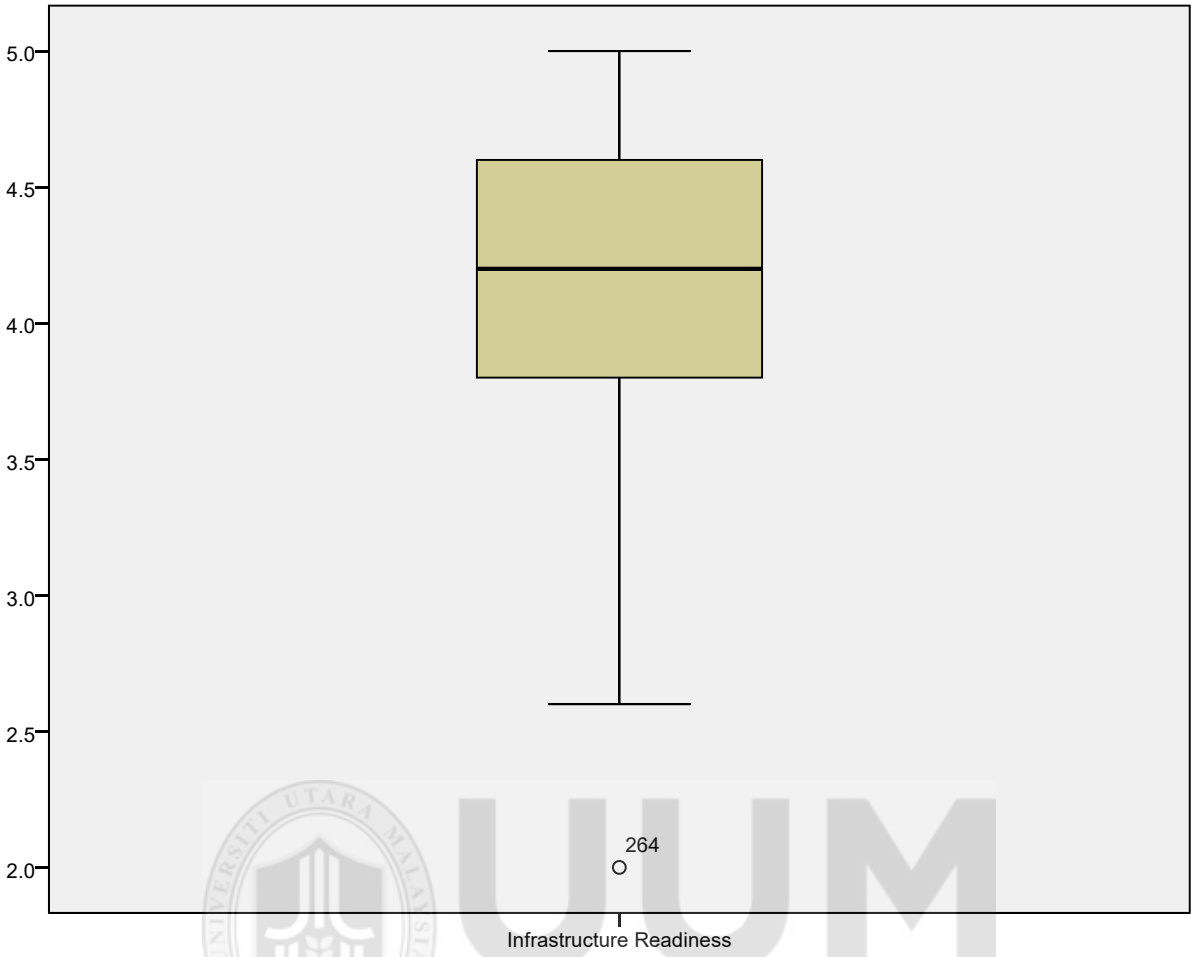
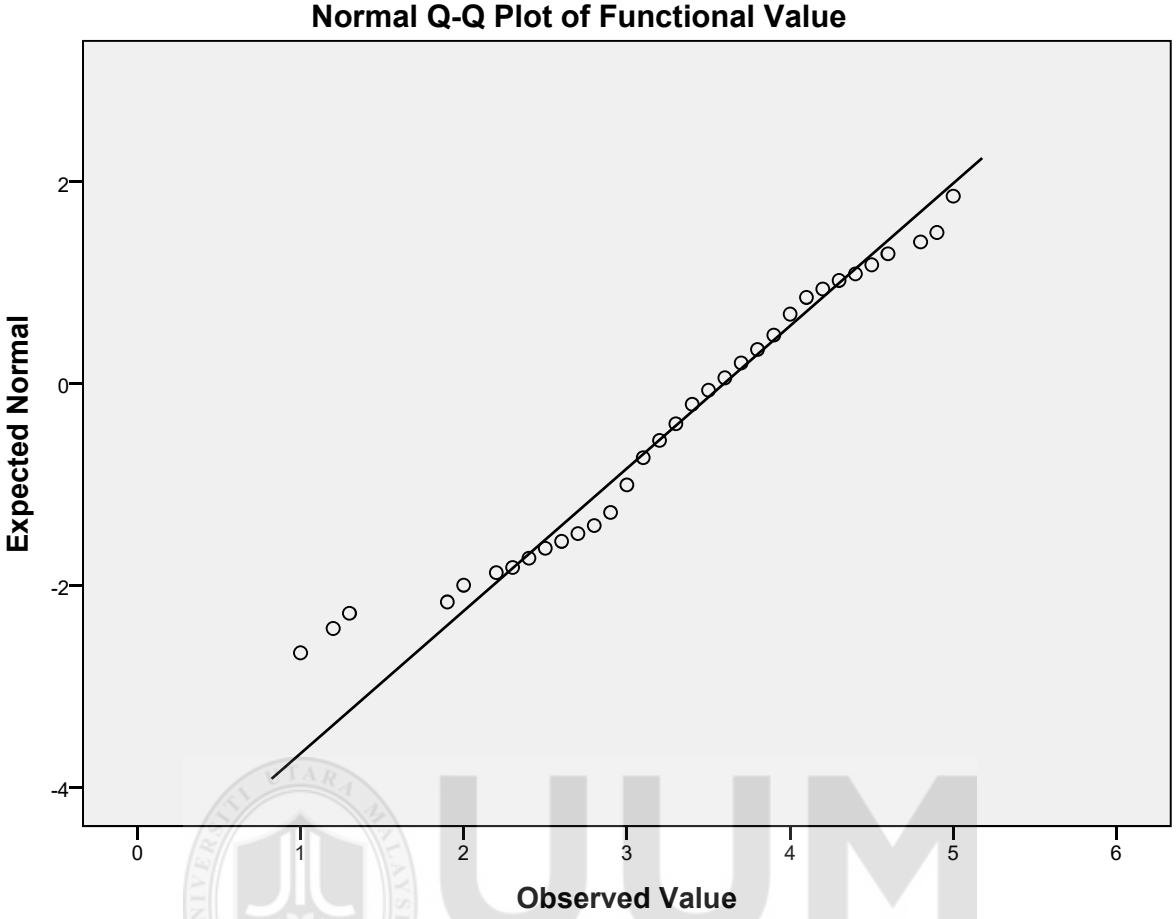
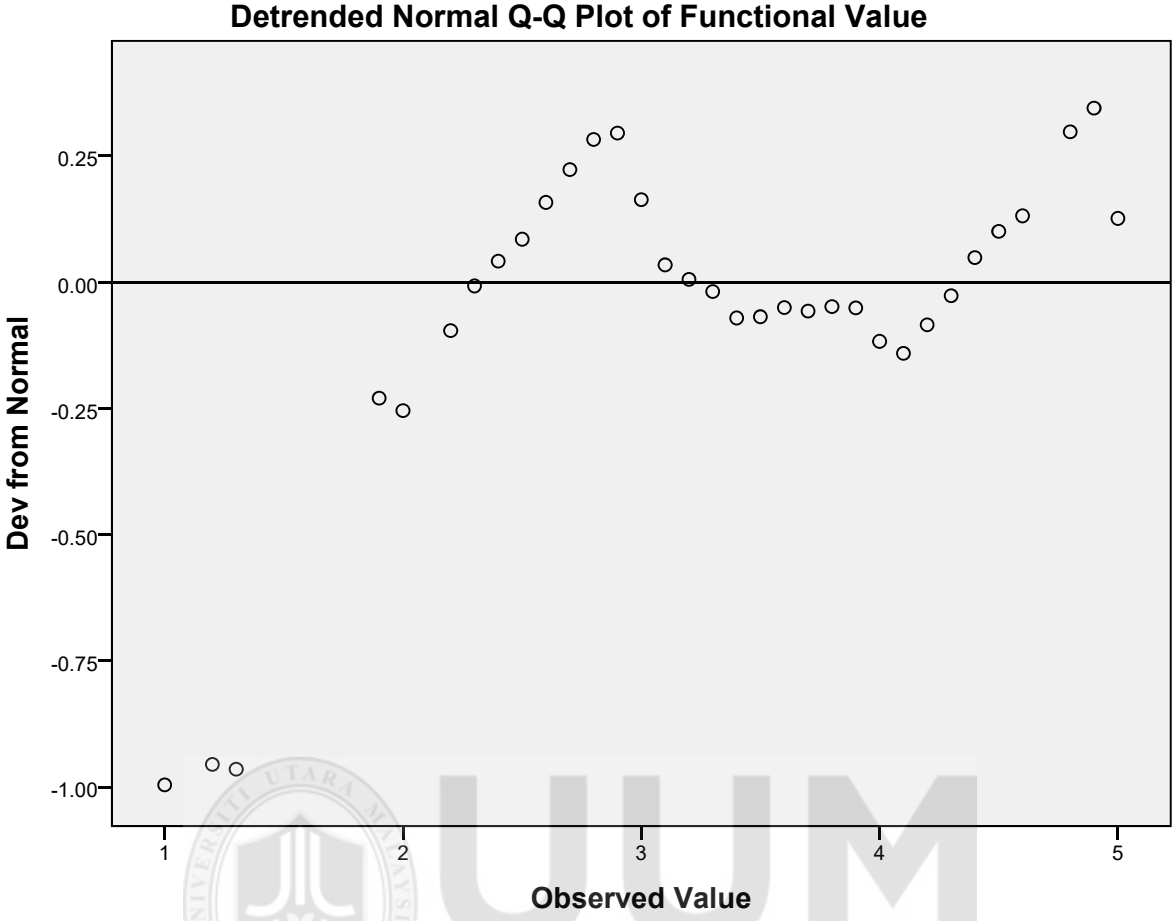


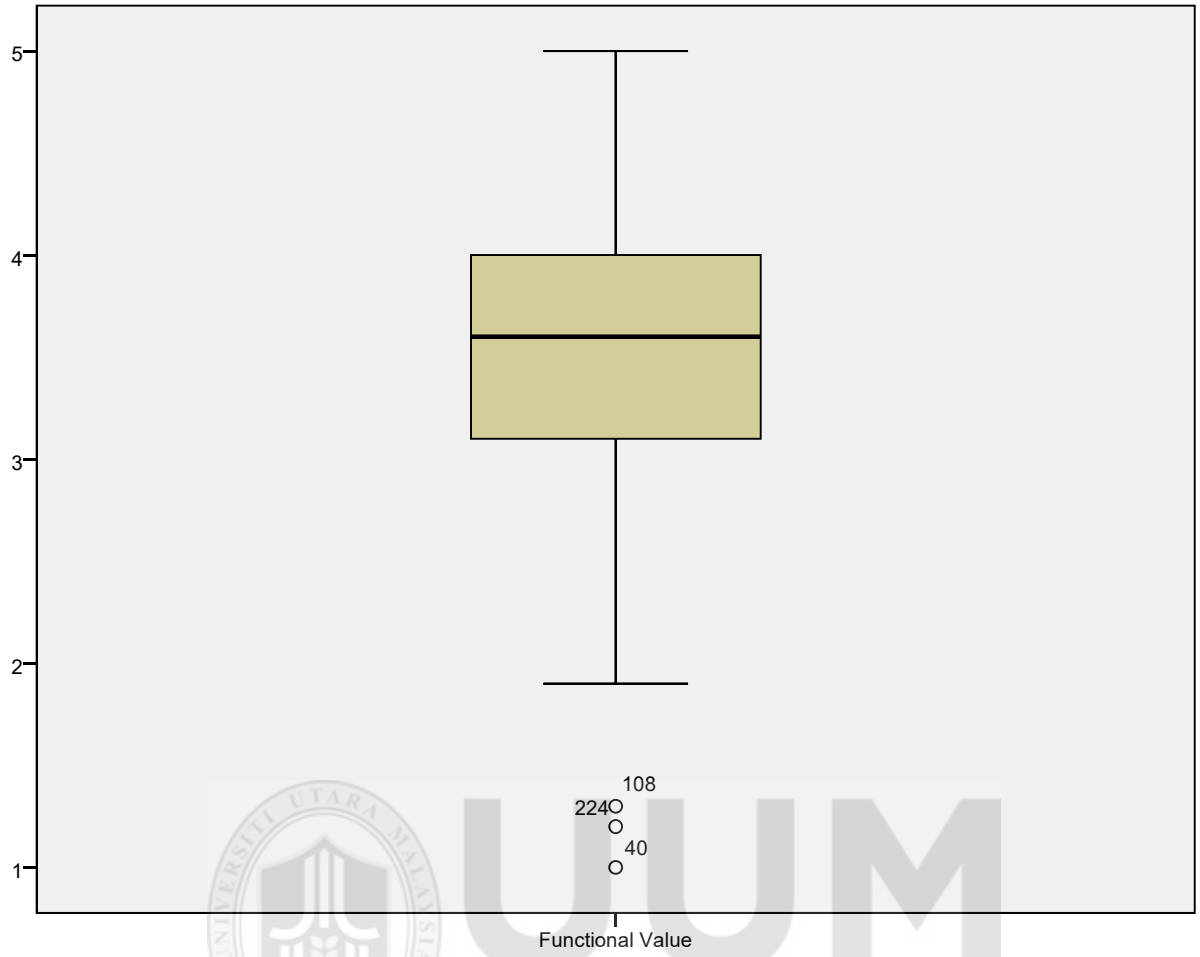




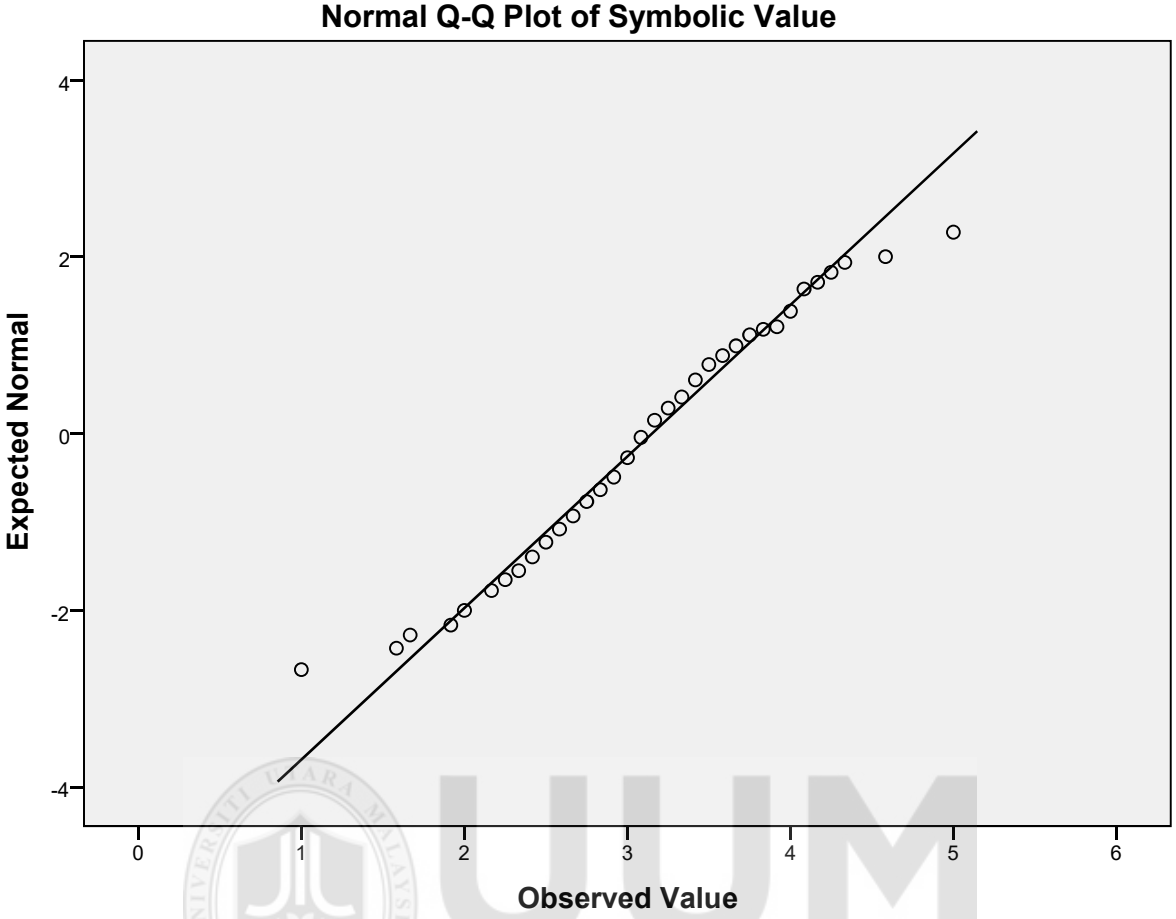
Functional Value

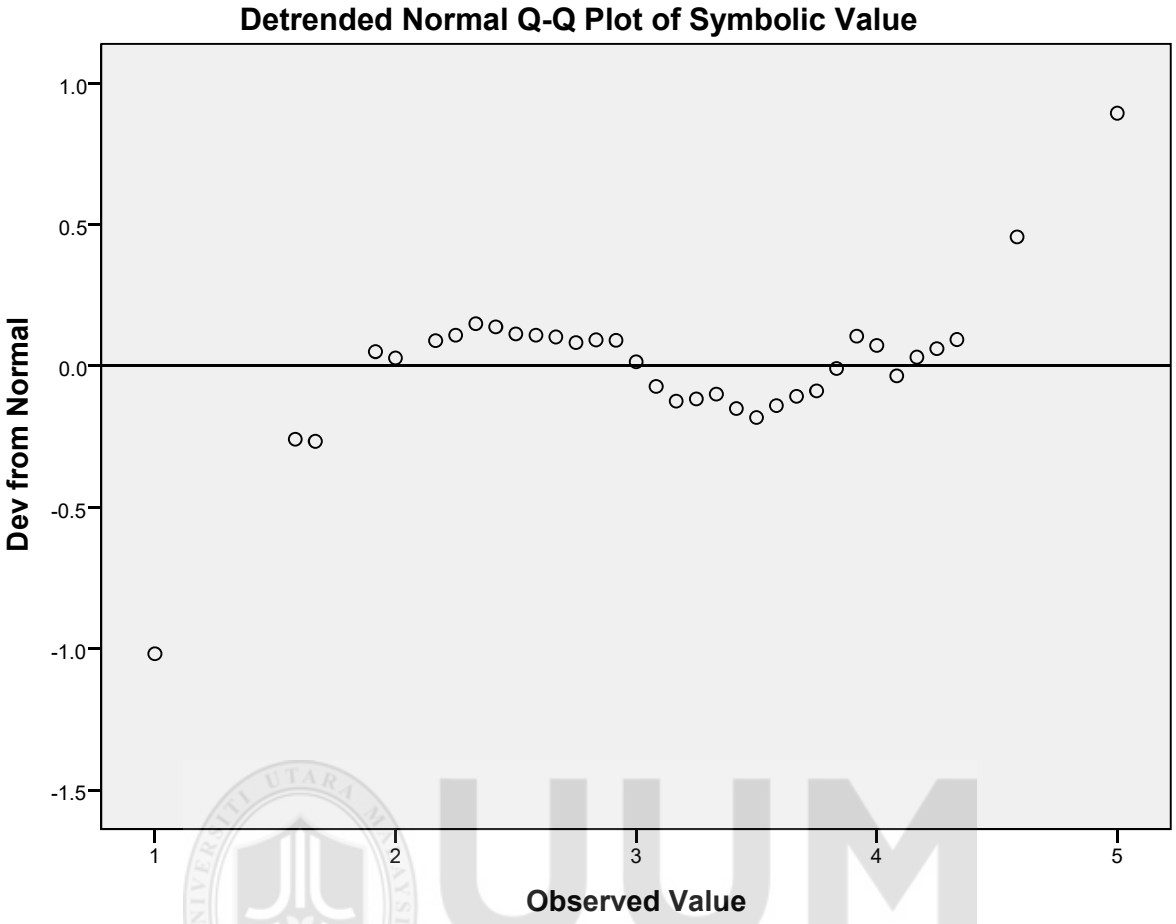


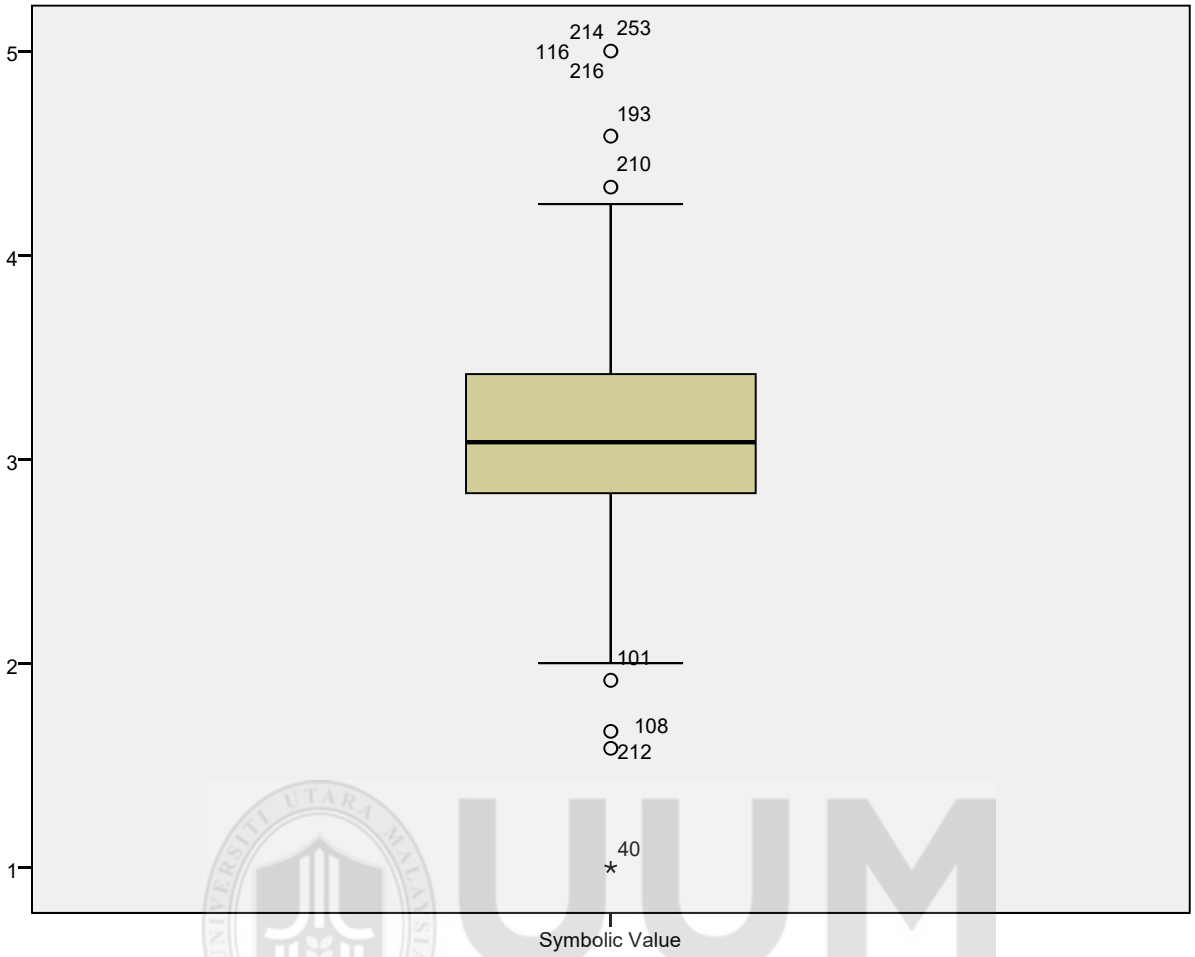




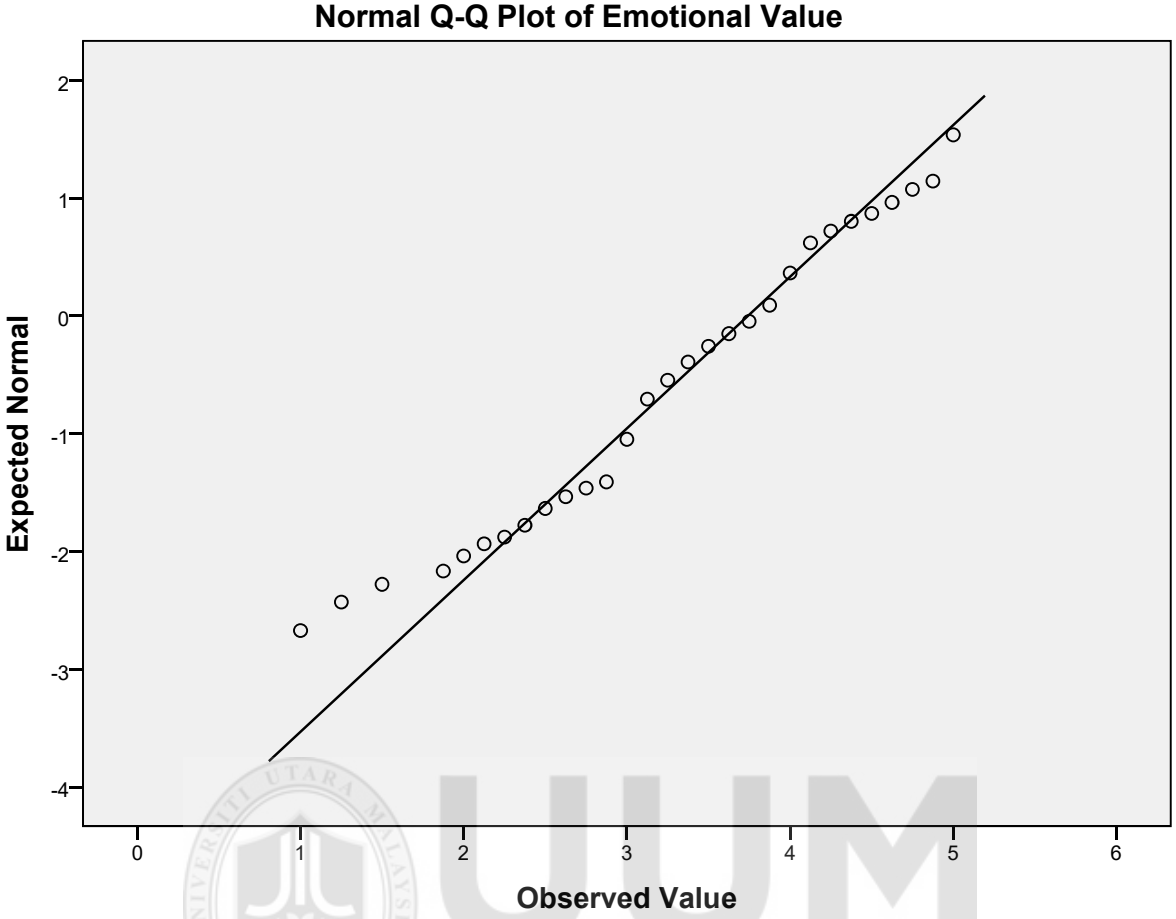
Symbolic Value

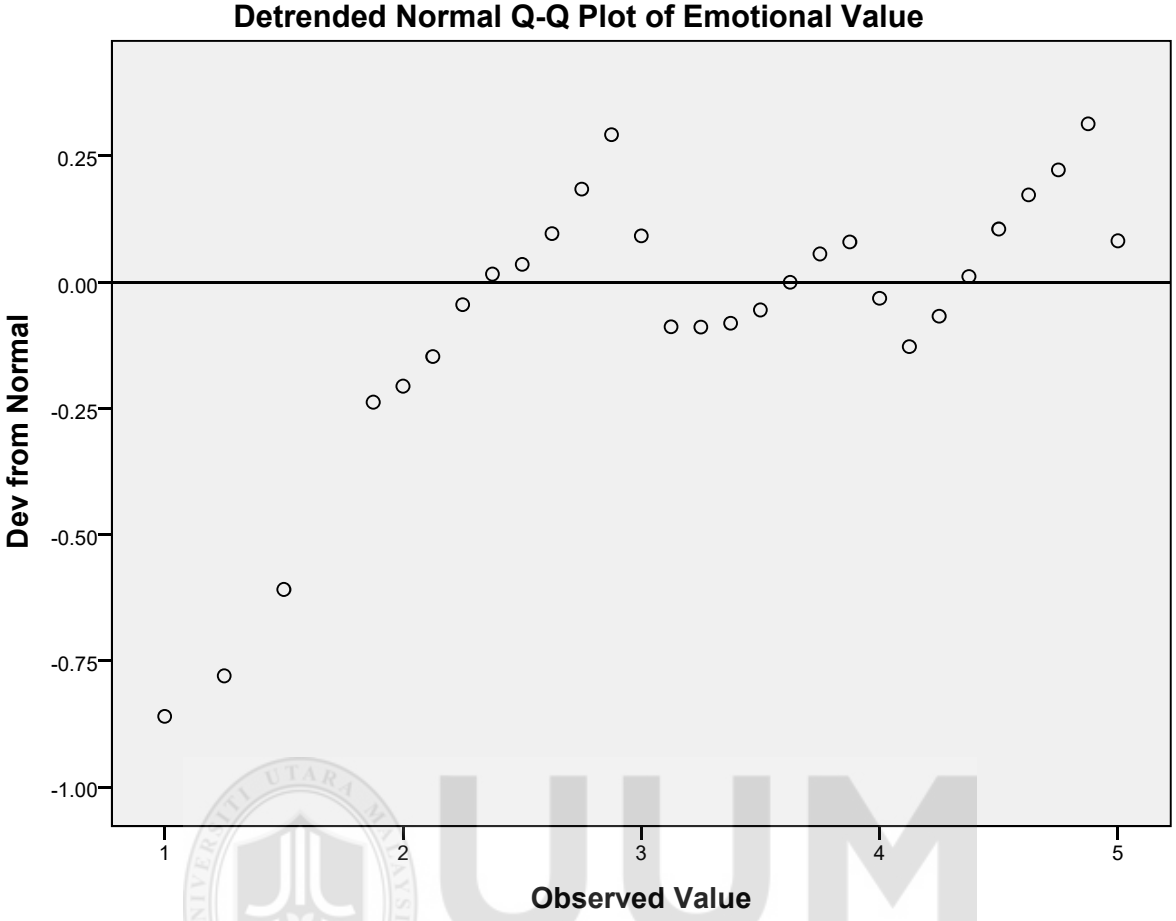


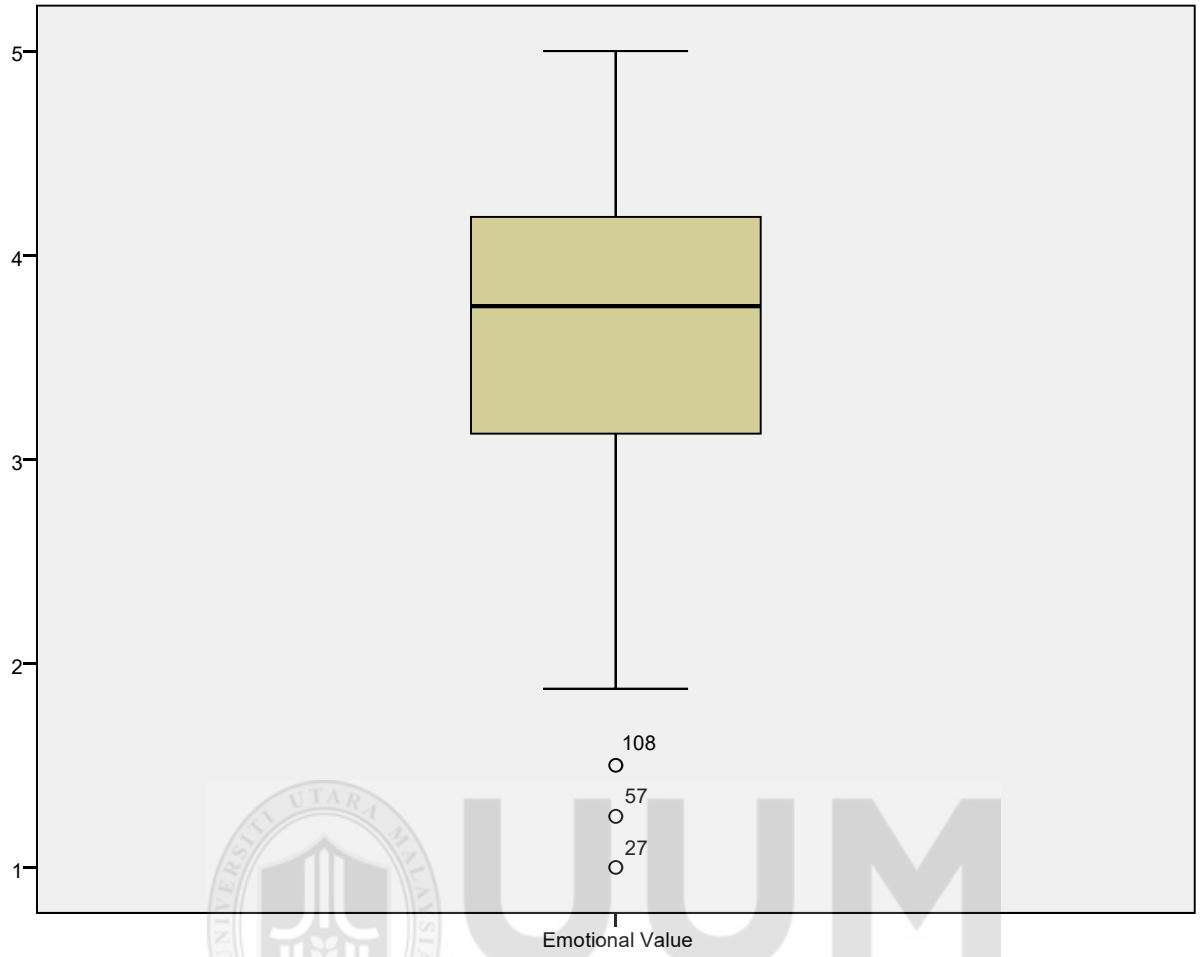




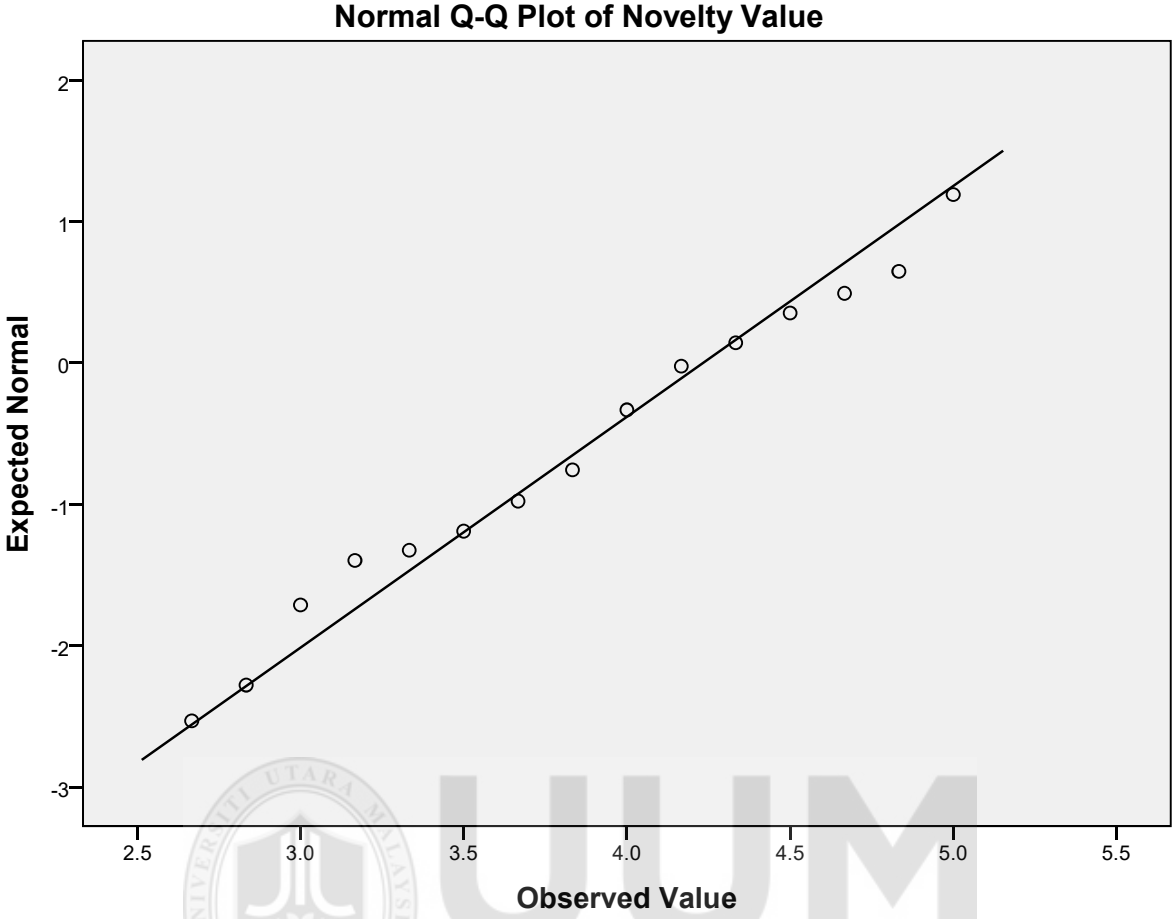
Emotional Value

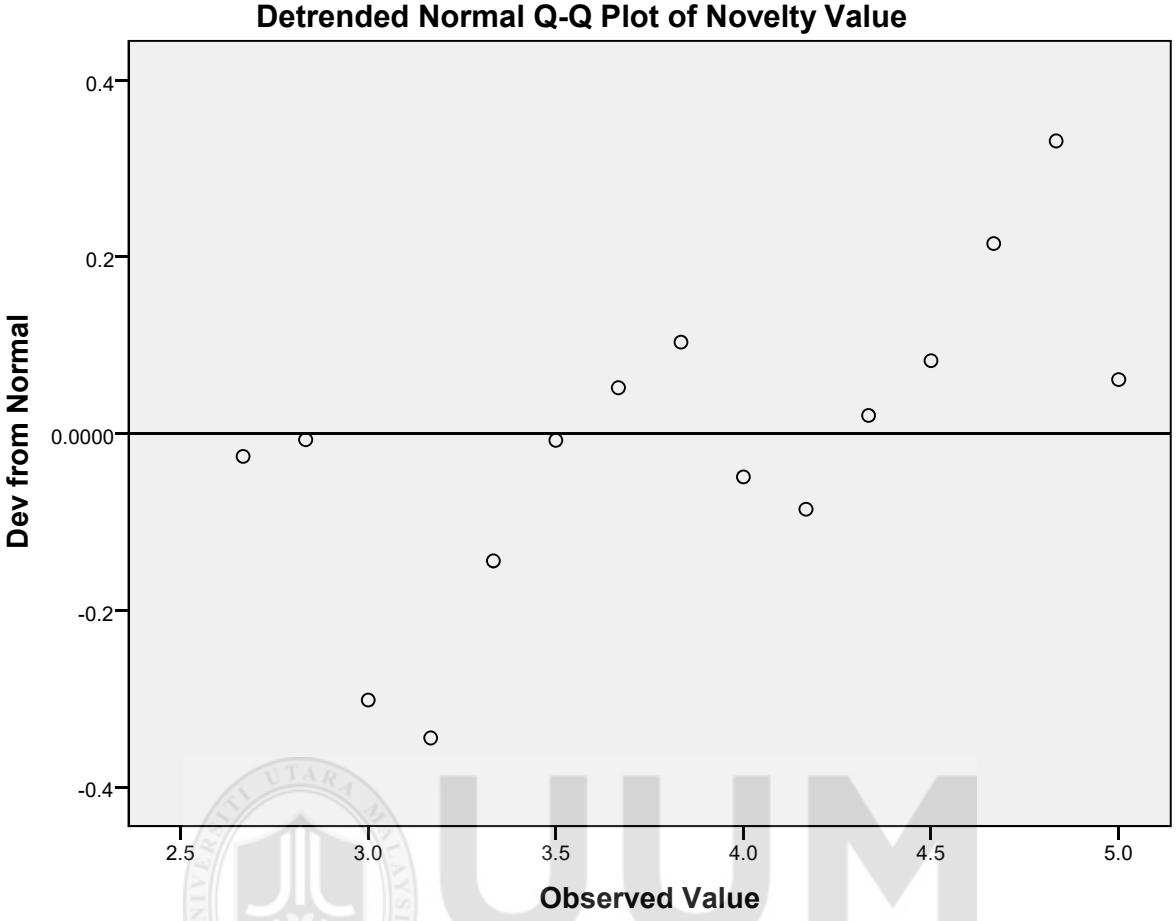


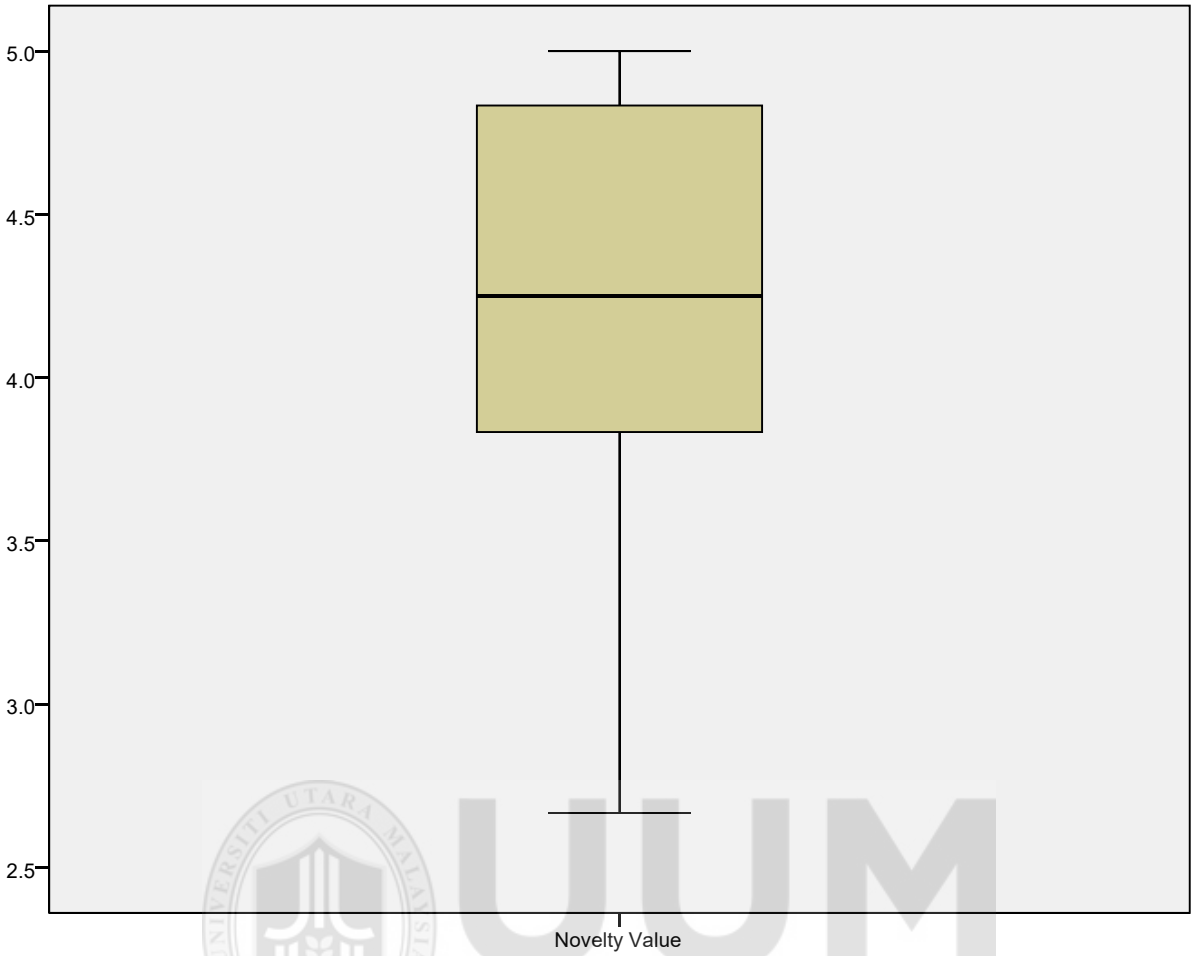




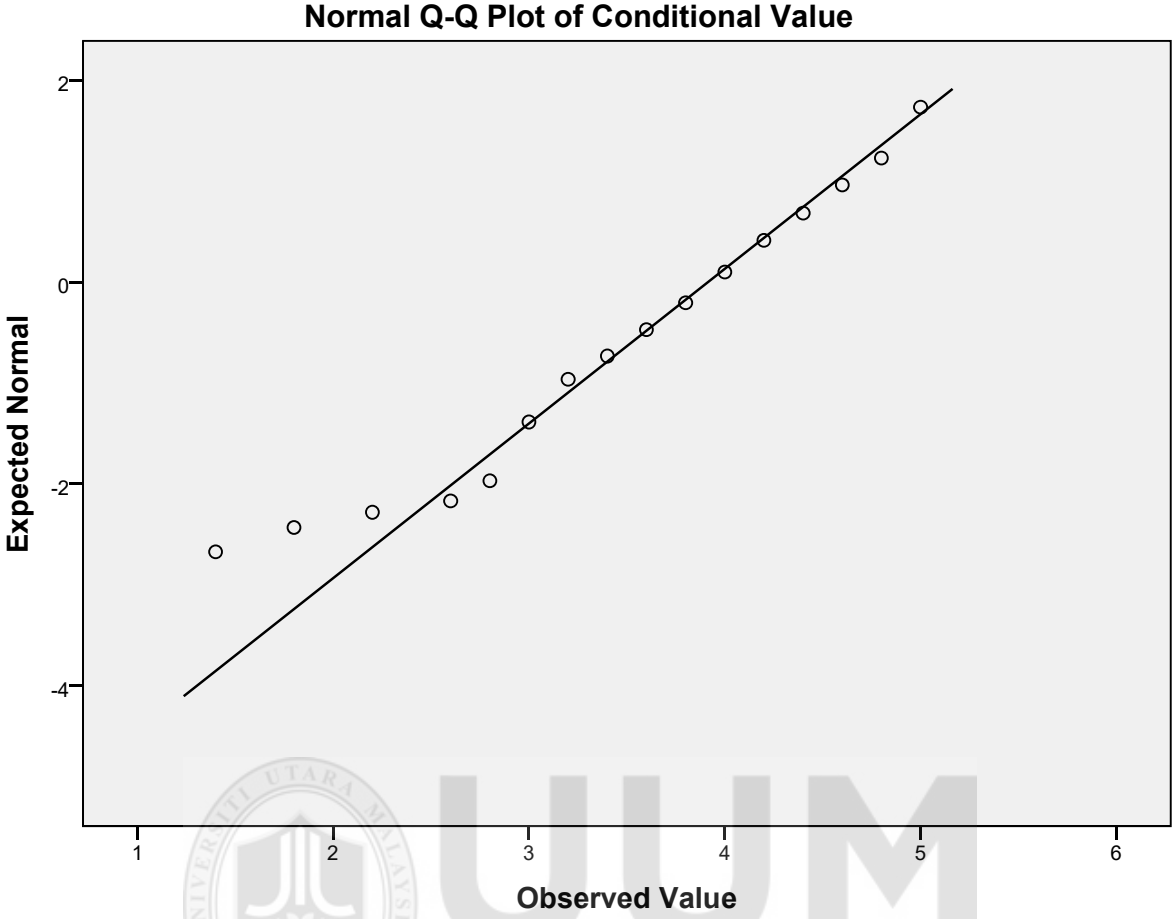
Novelty Value

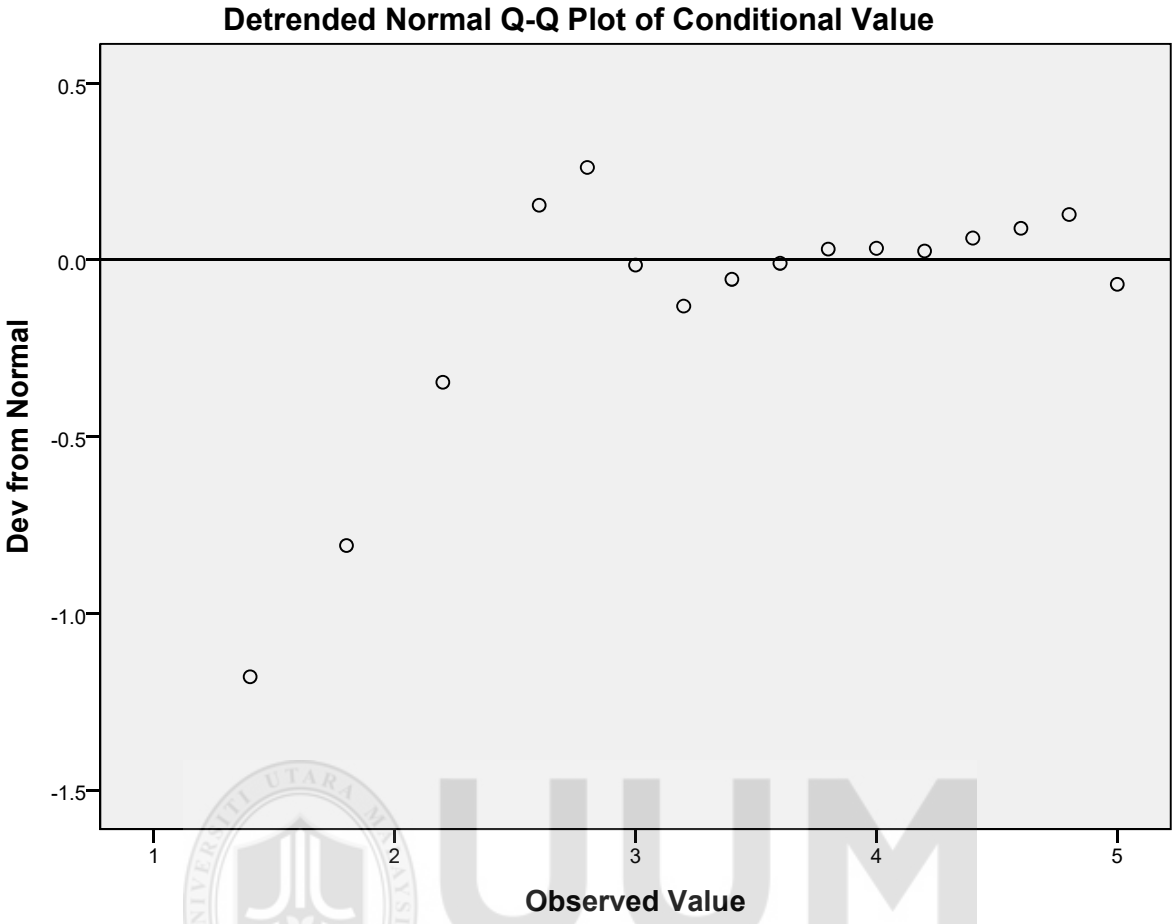


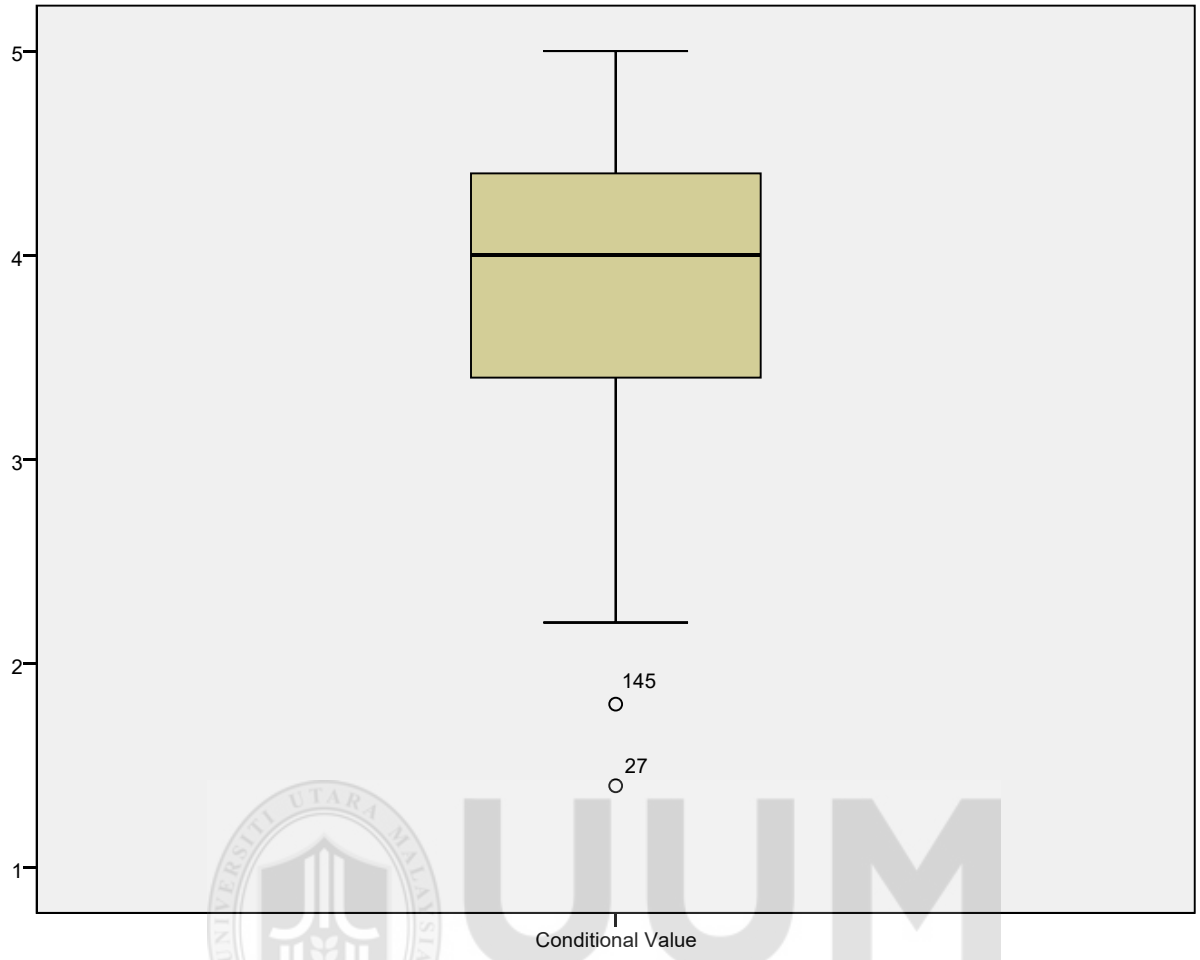




Conditional Value








```
T-TEST GROUPS=Gender(1 2)
  /MISSING=ANALYSIS
  /VARIABLES=IP
  /CRITERIA=CI(.95).
```

T-Test

Group Statistics

	Gender	N	Mean	Std. Deviation	Std. Error Mean
Intention To Purchase	Male	147	3.7460	.66876	.05516
	Female	117	3.7108	.71966	.06653

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Intention To Purchase	Equal variances assumed	1.044	.308	.411	262	.682	.03521	.08570	-.13355	.20396
	Equal variances not assumed			.407	240.127	.684	.03521	.08642	-.13504	.20545

```
ONEWAY IP BY Age
  /STATISTICS DESCRIPTIVES HOMOGENEITY
  /PLOT MEANS
  /MISSING ANALYSIS.
```

Oneway

Descriptives

Intention To Purchase

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
25 to 30 years old	41	3.8130	.70237	.10969	3.5913	4.0347	2.17	5.00
31 to 40 years old	67	3.7687	.74023	.09043	3.5881	3.9492	2.00	5.00
41 to 50 years old	120	3.6431	.67131	.06128	3.5217	3.7644	1.33	5.00
51 years old & above	36	3.8565	.63390	.10565	3.6420	4.0710	2.17	5.00
Total	264	3.7304	.69066	.04251	3.6467	3.8141	1.33	5.00

Test of Homogeneity of Variances

Intention To Purchase

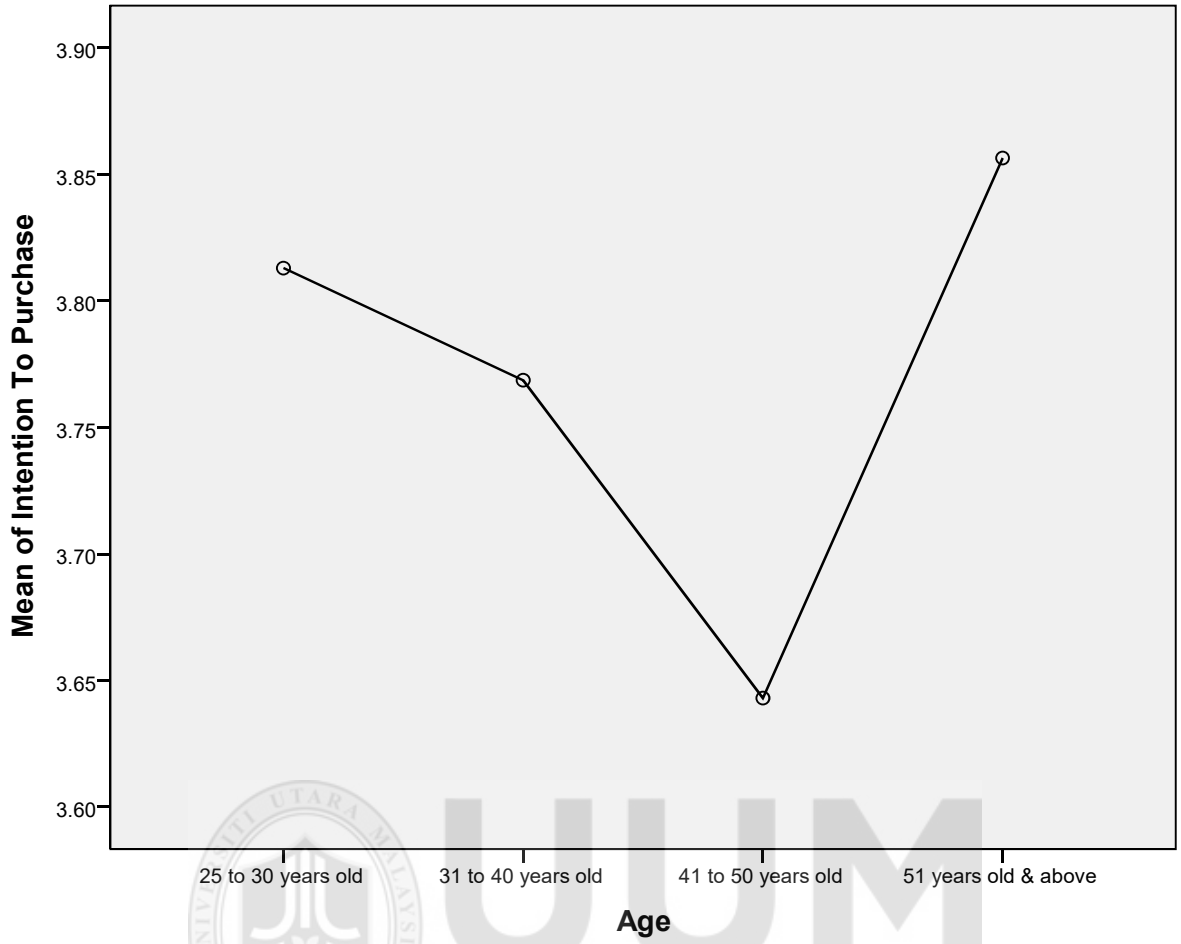
Levene Statistic	df1	df2	Sig.
.621	3	260	.602

ANOVA

Intention To Purchase

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.866	3	.622	1.308	.272
Within Groups	123.589	260	.475		
Total	125.454	263			

Means Plots




```
ONEWAY IP BY Education
  /STATISTICS DESCRIPTIVES HOMOGENEITY
  /MISSING ANALYSIS.
```

Oneway

Descriptives

Intention To Purchase

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Secondary Level	37	3.8333	.66551	.10941	3.6114	4.0552	2.17	5.00
Diploma	52	3.7821	.63275	.08775	3.6059	3.9582	2.33	5.00
Bachelor's Degree	89	3.7191	.60802	.06445	3.5910	3.8472	1.67	5.00
Master's Degree	68	3.6127	.74671	.09055	3.4320	3.7935	2.00	4.83
Doctorate	11	4.1061	.63802	.19237	3.6774	4.5347	2.67	5.00
Professional Qualification	7	3.5000	1.39775	.52830	2.2073	4.7927	1.33	5.00
Total	264	3.7304	.69066	.04251	3.6467	3.8141	1.33	5.00

Test of Homogeneity of Variances

Intention To Purchase

Levene Statistic	df1	df2	Sig.
4.058	5	258	.001

ANOVA

Intention To Purchase

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3.407	5	.681	1.441	.210
Within Groups	122.047	258	.473		
Total	125.454	263			

```
ONEWAY IP BY Marital
  /STATISTICS DESCRIPTIVES HOMOGENEITY
  /MISSING ANALYSIS.
```

Oneway

Descriptives

Intention To Purchase

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Single	56	3.7411	.75673	.10112	3.5384	3.9437	2.00	5.00
Married	204	3.7426	.67062	.04695	3.6501	3.8352	1.33	5.00
Divorced/Widowed	4	2.9583	.28464	.14232	2.5054	3.4113	2.67	3.33
Total	264	3.7304	.69066	.04251	3.6467	3.8141	1.33	5.00

Test of Homogeneity of Variances

Intention To Purchase

Levene Statistic	df1	df2	Sig.
1.533	2	261	.218

ANOVA

Intention To Purchase

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2.421	2	1.211	2.568	.079
Within Groups	123.033	261	.471		
Total	125.454	263			

```
ONEWAY IP BY Occupation
  /STATISTICS DESCRIPTIVES HOMOGENEITY
  /MISSING ANALYSIS.
```

Oneway

Descriptives

Intention To Purchase

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Government Servant	34	4.1029	.74875	.12841	3.8417	4.3642	2.33	5.00
Private Sector	196	3.6786	.65817	.04701	3.5859	3.7713	1.33	5.00
Self-Employed	24	3.5625	.76109	.15536	3.2411	3.8839	2.00	4.83
Retired or Pensioner	3	4.2778	.69389	.40062	2.5541	6.0015	3.50	4.83
5	7	3.7143	.47837	.18081	3.2719	4.1567	3.00	4.33
Total	264	3.7304	.69066	.04251	3.6467	3.8141	1.33	5.00

Test of Homogeneity of Variances

Intention To Purchase

Levene Statistic	df1	df2	Sig.
1.131	4	259	.342

ANOVA

Intention To Purchase

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	6.823	4	1.706	3.724	.006
Within Groups	118.632	259	.458		
Total	125.454	263			


```
DATASET ACTIVATE DataSet4.

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\Data Analysis 1\Data '+
    'Analysis 264a.sav'
  /COMPRESSED.
ONEWAY IP BY Occupation
  /STATISTICS DESCRIPTIVES HOMOGENEITY
  /MISSING ANALYSIS.
```

Oneway

Descriptives

Intention To Purchase

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Government Servant	34	4.1029	.74875	.12841	3.8417	4.3642	2.33	5.00
Private Sector	196	3.6786	.65817	.04701	3.5859	3.7713	1.33	5.00
Self-Employed	24	3.5625	.76109	.15536	3.2411	3.8839	2.00	4.83
Retired or Pensioner	3	4.2778	.69389	.40062	2.5541	6.0015	3.50	4.83
Others	7	3.7143	.47837	.18081	3.2719	4.1567	3.00	4.33
Total	264	3.7304	.69066	.04251	3.6467	3.8141	1.33	5.00

Test of Homogeneity of Variances

Intention To Purchase

Levene Statistic	df1	df2	Sig.
1.131	4	259	.342

ANOVA

Intention To Purchase

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	6.823	4	1.706	3.724	.006
Within Groups	118.632	259	.458		
Total	125.454	263			

```
ONEWAY IP BY Race
  /STATISTICS DESCRIPTIVES HOMOGENEITY
  /MISSING ANALYSIS.
```


Oneway

Descriptives

Intention To Purchase

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Malay	214	3.7321	.66363	.04536	3.6427	3.8215	1.33	5.00
Chinese	19	3.4474	.76387	.17524	3.0792	3.8155	2.00	5.00
Indian	31	3.8925	.79180	.14221	3.6020	4.1829	2.33	5.00
Total	264	3.7304	.69066	.04251	3.6467	3.8141	1.33	5.00

Test of Homogeneity of Variances

Intention To Purchase

Levene Statistic	df1	df2	Sig.
1.923	2	261	.148

ANOVA

Intention To Purchase

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2.337	2	1.168	2.477	.086
Within Groups	123.118	261	.472		
Total	125.454	263			

```
ONEWAY IP BY Income
  /STATISTICS DESCRIPTIVES HOMOGENEITY
  /MISSING ANALYSIS.
```

Oneway

Descriptives

Intention To Purchase

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
RM5,000 to RM7,000	137	3.7652	.67415	.05760	3.6513	3.8791	2.00	5.00
RM7,001 to RM10,000	47	3.5177	.63439	.09254	3.3315	3.7040	2.00	5.00
RM10,001 to RM15,000	53	3.7767	.62783	.08624	3.6037	3.9498	2.17	5.00
RM15,001 to RM20,000	16	3.5937	1.10381	.27595	3.0056	4.1819	1.33	5.00
Above RM20,001	11	4.1818	.37605	.11338	3.9292	4.4345	3.50	4.67
Total	264	3.7304	.69066	.04251	3.6467	3.8141	1.33	5.00

Test of Homogeneity of Variances

Intention To Purchase

Levene Statistic	df1	df2	Sig.
4.112	4	259	.003

ANOVA

Intention To Purchase

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4.946	4	1.236	2.657	.033
Within Groups	120.509	259	.465		
Total	125.454	263			

```
ONEWAY IP BY Districts
  /STATISTICS DESCRIPTIVES HOMOGENEITY
  /MISSING ANALYSIS.
```

Oneway

Descriptives

Intention To Purchase

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Kuala Lumpur	139	3.7638	.70508	.05980	3.6455	3.8820	1.67	5.00
Petaling Jaya	28	3.6964	.68351	.12917	3.4314	3.9615	2.17	5.00
Subang Jaya	15	3.7667	.49522	.12786	3.4924	4.0409	2.83	4.33
Shah Alam	51	3.6373	.74439	.10424	3.4279	3.8466	2.00	5.00
Klang	17	3.6961	.51786	.12560	3.4298	3.9623	2.50	4.83
Ampang	14	3.8095	.78680	.21028	3.3552	4.2638	1.33	4.50
Total	264	3.7304	.69066	.04251	3.6467	3.8141	1.33	5.00

Test of Homogeneity of Variances

Intention To Purchase

Levene Statistic	df1	df2	Sig.
1.398	5	258	.225

ANOVA

Intention To Purchase

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.757	5	.151	.313	.905
Within Groups	124.697	258	.483		
Total	125.454	263			


```
ONEWAY IP BY Choices
  /STATISTICS DESCRIPTIVES HOMOGENEITY
  /MISSING ANALYSIS.
```

Oneway

Descriptives

Intention To Purchase

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Nissan Leaf	38	3.6711	.63729	.10338	3.4616	3.8805	2.17	5.00
Tesla S	46	3.8696	.67761	.09991	3.6683	4.0708	2.33	5.00
BMW 330e	38	3.6930	.53063	.08608	3.5186	3.8674	2.00	5.00
BMW i3s EV	30	3.9444	.51850	.09466	3.7508	4.1381	3.17	5.00
Mercedes Benz C300e	51	3.6078	.83986	.11760	3.3716	3.8441	1.33	5.00
Mercedes Benz S560e	27	3.9383	.59583	.11467	3.7026	4.1740	2.17	5.00
Others Brand	34	3.4804	.78899	.13531	3.2051	3.7557	2.00	5.00
Total	264	3.7304	.69066	.04251	3.6467	3.8141	1.33	5.00

Test of Homogeneity of Variances

Intention To Purchase

Levene Statistic	df1	df2	Sig.
2.801	6	257	.012

ANOVA

Intention To Purchase

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	6.510	6	1.085	2.344	.032
Within Groups	118.944	257	.463		
Total	125.454	263			

```
DESCRIPTIVES VARIABLES=IP CA IR FV SV EV NV CV
  /STATISTICS=MEAN STDDEV MIN MAX KURTOSIS SKEWNESS.
```

Descriptives

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Intention To Purchase	264	1.33	5.00	3.7304	.69066	-.389	.150	.356	.299
Consumers' Attitude	264	1.55	5.00	3.8285	.68262	-.394	.150	.391	.299
Infrastructure Readiness	264	2.00	5.00	4.1598	.60043	-.425	.150	-.127	.299
Functional Value	264	1.00	5.00	3.5989	.70858	-.163	.150	.893	.299
Symbolic Value	264	1.00	5.00	3.1506	.58279	.336	.150	1.542	.299
Emotional Value	264	1.00	5.00	3.7434	.77674	-.250	.150	.183	.299
Novelty Value	264	2.67	5.00	4.2336	.61245	-.395	.150	-.598	.299
Conditional Value	264	1.40	5.00	3.9136	.65267	-.307	.150	.100	.299
Valid N (listwise)	264								